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Three Essays on The Effects of The Exchange Act Rule 12h-6 on Cross-Listings of Foreign Firms in The U.S. Market

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THREE ESSAYS ON THE EFFECTS OF THE EXCHANGE ACT RULE 12H-6 ON CROSS-LISTINGS OF FOREIGN FIRMS IN THE U.S. MARKET

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DEDICATION

I dedicate this dissertation to my mother Rapheepan and my father Montree, my never-ending source of love, strength, and support which are fundamental to my accomplishment in this journey. This dissertation is also dedicated to my beloved husband, Darin Frye, who always stands by me and never lets me lose my faith; without his support, encouragement and understanding, this document and this journey would not have been possible. This is dedicated to my mother- and father-in-law, Linda and Willard, who give me a special source of comfort and compassion. Their moral support has helped nurture my strength and enable me to move onward and reach my dream.

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ABSTRACT

The 2007 Exchange Act Rule 12h-6 relaxes the deregistration requirements for the U.S.-listed foreign firms to leave the U.S. market, opening an opportunity to examine the benefit and costs of listing in the U.S market for foreign firms. Using a sample of all U.S.-exchange cross-listing events during 1998-2012, the results document that the U.S. exchanges are more likely to attract a larger pool of foreign listing activities in the post-Rule 12h-6 period. This increased attractiveness of the U.S market, however, is worrisome as the post-Rule 12h-6 listings appear to be more pronounced among firms from countries with weaker investor protection. Likewise, the critical evidence, including a substantial decline in valuation premiums of U.S. cross-listing, and a significant increase in valuation gap between the U.S. domestic and the U.S.-listing foreign firms, raises more concern about the adverse impact of the new rule. Overall, the results suggest that while the rule enhanced the attractiveness of the U.S. market, its unintended consequences such as the weakening disclosure requirements and protection system can provoke a moral hazard issue in the U.S. cross-listing and ultimately may imperil the supremacy of the U.S. capital market.

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CHAPTER I

INTRODUCTION

This dissertation consists of three papers, all focusing on the Exchange Act Rule 12h-6 adopted by the U.S. Securities and Exchange Commission (SEC) in 2007. The Exchange Act Rule 12h-6 relaxes the deregistration requirements for the U.S.-listed foreign firms to leave the U.S. market as well as the U.S. regulatory environment and legal enforcement, more freely than their peers, the U.S. domestic companies, can do so. This rare event opens an opportunity for researchers to examine the benefits and costs of the deregulation, which has been a significant trend in recent years. This dissertation examines the effect of Exchange Act Rule 12h-6 from three different angles, including insiders of foreign firms, outside investors, and the U.S. market perspectives. From the insiders' point of view, the introduction of leniency to the U.S. legal regime would make the U.S. stock exchanges a more welcoming marketplace for foreign listings. Foreign firms would benefit from the lowering costs of U.S. cross-listing, more particularly the costs associated with exiting the market and the regulatory compliance. As a result, this would likely promote the competitiveness of the U.S. market in the global competition for international listings among other major exchanges. Taking these possibilities into account, Paper number one examines the role of the new deregistration rules in encouraging the foreign listing activities on the U.S. stock market. Using a sample of all U.S.-exchange cross-listing events during 1998-2012, the results show a significant increase in the likelihood of U.S.-cross-listing of a foreign company after the adoption of the new deregistration rules. This evidence is in line with the prediction that the enactment of Rule

12h-6 is very likely beneficial to the foreign companies. It is, however, important to note that the paper also observes a potential drawback of the new rules that can be a red flag to the policy makers: the cross-listing activities post Rule 12h-6 appears to be more pronounced among firms from countries with weaker governance regime. Because the influx of the poor governance firms to the U.S. exchanges could deteriorate the overall quality of the market perceived by investors and put the market at risk of losing its exclusive, elite status, this finding represents the potential costs of the new deregistration rules that should be closely examined.

Paper number two investigates the costs and benefits of the Exchange Act Rule 12h-6 from the outside investors' viewpoint. The paper builds its argument from the evidence observed in the prior paper that the new overly-permissive deregistration rules could likely create an unintentional loophole by attracting more foreign firms with poorer corporate governance characteristics to the U.S. market. If this is the case, investors would place more valuation discount when investing in the U.S.-listed foreign stocks post Rule 12h-6. This phenomenon would lead to the decline in *U.S. cross-listing premiums*, which is the valuation premium that foreign firms will typically gain from committing themselves to the stronger legal system of the U.S. market through the U.S. cross-listing activities. If investors, however, view that the benefits of the new rules (i.e., help firm save more costs) likely outweigh the risk, then an incline in U.S. cross-listing premiums will be observed. The change in cross-listing premiums post Rule 12h-6 hence simply reflects the *net* effect of the Exchange Act Rule 12h-6 from outside investors' perspective. Using the same sample employed by paper number one, the results report a decline in the cross-listing premiums in the post-Rule 12h-6 period. This drop in the U.S. cross-listing premiums is even more pronounced for firms domiciled in countries with poor governance condition. This evidence implies that from the investors' point of view, the Exchange Act Rule 12h-6 appears to do more harm than good. The benefits of the rules are likely smaller than the costs.

With overall findings from paper number two, it is reasonable to conclude that investors place their high value on the stringency of the U.S. laws and regulations when it comes to firm

valuation. Taking this inference into consideration, Paper number three examines the impact of the 2007 Exchange Act on the role of the U.S. market in legal bonding. Based on the complete legal bonding assumption, this paper postulates that there must be a parity in valuation between the U.S. domestic and the U.S.-listed foreign firms with similar attributes independent of the strength in legal regimes in firms' home countries. Using the sample of U.S. cross-listed and the U.S. domestic companies, the study detects a significant discrepancy in valuation among the two groups of firms. More interestingly, this gap becomes even larger after the Rule 12h-6 enactment. These findings deliver two crucial implications. First, the evidence raises doubt on the concept of complete legal bonding. The considerable exemptions made by the U.S. authorities to non-U.S. firms even before the 2007 deregulation likely incur a critical hindrance to foreign companies to bond with the U.S. laws. Second, the evidence provides further support on the detrimental impact of the new deregistration rules on the U.S. market and the U.S. legal system. Together, the results from this dissertation suggest that while the rule enhanced the attractiveness of the U.S. market, its unintended consequences such as the weakening disclosure requirements and protection system can provoke a moral hazard issue in the U.S. cross-listing and ultimately may imperil the supremacy of the U.S. capital market.

CHAPTER II

ESSAY I. U.S. MARKET DEREGULATION THROUGH THE EXCHANGE ACT RULE 12H-6 AND THE FLOW OF INTERNATIONAL LISTINGS IN THE U.S. MARKET

2.1 Introduction

During the 1990s, the U.S. was a popular destination for foreign companies seeking to raise capital abroad. Evidence from Pagano, Röell, and Zechner (2002) shows that between 1986 and 1997 the foreign listings in the U.S. increased from 350 to 873. This striking incremental increase employed by the U.S. did not appear to be a common trend in other markets, however. Most European stock exchanges, including London, for example, encountered a notable decline in new foreign listings. While at the same time, some of these exchanges even failed to attract new listings in their markets.

At the turn of the century, the U.S. market has been faced with the reverse trend. A sharp decline in the U.S. market share of global IPOs from 48% in the late 1990s to 8% in 2006 as reported by Zingales (2007) raised public concern that the relative attractiveness of U.S. equity markets may have weakened. Very likely, the slump of international listings in the U.S. market may have arisen from the concurrent action of multiple causes, instead of one single factor. Still, a popular conventional wisdom lays the blame for this phenomenon on the higher regulatory costs imposed by the Sarbanes- Oxley Act (SOX) (see, e.g., Duarte, Kong, Siegel, and Young, 2014, Iliev, 2010, Litvak, 2007a,b, 2008, Marosi and Massoud,

2008, Zhang, 2007, Zingales, 2007). Not to mention the demanding requirements for deregistration that made it even more difficult for firms, even those with the insufficient interest of U.S. investors in their U.S.-registered securities, to break away from such U.S. regulatory costs could act as an additional force further aggravating the listing preference of foreign firms on the U.S. exchanges.

In response to this concern, on March 21, 2007, the U.S. Securities and Exchange Commission (SEC) unanimously passed Exchange Act Rule 12h-6 to ease the deregistration requirements for foreign private issuers (FPIs) seeking to escape the U.S. market and its regulatory costs. The Exchange Act Rule 12h-6 is considered the "*first significant deregulation of U.S. disclosure requirements since the passage of the 1933/1934 Exchange and Securities Acts.*" (Fernandes, Lel, Miller, 2010, P.130). The rule not only permits an FPI, for the first time, to terminate its reporting obligations under the Exchange Act, but also softens the qualification criteria for deregistration to be more achievable. In place of the former rule where only an FPI with subject securities held of record less than 300 U.S. holders would be eligible for *suspending* its reporting obligations[1], the new rule allows any foreign issuers who meet the new qualification criteria, including the revised head-count method and the new alternative benchmark – "relative average daily trading volume" – to be qualified for deregistration. SEC believes that the Exchange Act Rule 12h-6 which adds more lenity to the exit channel for foreign firms to leave the market should make U.S. exchanges a friendlier marketplace for international listings and should ultimately render the U.S. market competitiveness.

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[1] During the suspension period, a company must continue annual verification that its number of holders of record remains below 300, and reporting duty would automatically resume whenever the holders of records exceed this number. The fact that a company could merely *suspend*, rather than terminate, would have made the possibility for a U.S. cross-listed firm to escape the Exchange Act reporting system profoundly slim.

In this research paper, I examine the role of the new deregistration rules in influencing a firm's cross-list decision in the U.S. market in two separate models. First, I employ the listing decision model to study the association between the rule and the changes in the likelihood of a foreign firm choosing to cross-list on a U.S. exchange against choosing to remain local. Because a non-cross-listed firm is a foreign firm that has thus far not decided to cross-list elsewhere, analyzing the association between the Rule 12h-6 enactment and the change in the decision of a non-cross-listed firm from remaining local to cross-listing in the U.S. would shed light on the impact of Rule 12h-6 on the improvement of U.S. market attractiveness.

I further investigate the economic impact of Rule 12h-6 using the exchange choice model employed by Piotroski and Srinivasan (2008). The exchange choice model focuses on a firm's exchange choice given the firm's decision to cross-list on a high-profile exchange. The results from the exchange choice model would thus explain the impact of Exchange Act Rule 12h-6 on the change in the U.S. market's relative attractiveness. Following Doidge, Karolyi, and Stulz (2009b), Duarte et al. (2014) and Piotroski and Srinivasan (2008), I assess listing activities on U.S. exchanges against the activities on the London Stock Exchange's (LSE) Main Market. The similarity in market attributes[2] between the U.S. and the U.K. together with the nonexistence of Rule 12h-6-like regulation

[2] Among all major exchanges, the LSE's Main Market is the most comparable to the U.S. markets according to market size and frequency of foreign listing activity perspectives. Doidge et al. (2009b) report that in 1998 approximately 30% of all foreign listings in the world occurred in the U.S. major markets and roughly 16% happened in the LSE's Main Market and Alternative Investment Market (AIM), while no other exchanges had more than 7%. Also, from the World Federation of Exchanges monthly report as of December 2012, the London Stock Exchange group was ranked third by market capitalization after the NYSE and the Nasdaq.

in the U.K. makes the LSE's Main Market the most legitimate alternate market for the U.S. in this study.

Using panel data of U.S.-exchange cross-listed and non-cross-listed firms from 1998-2012, I develop a listing decision model which incorporates firm-, exchange-, industry-, country-, and governance-specific factors to describe the variation in U.S. cross-listing decisions of foreign companies in response to Rule 12h-6. Consistent with prior research, I find that U.S. exchanges are more likely to attract firms that are larger in size and higher in growth opportunities. At the exchange level, I find that foreign firms are drawn to U.S. exchanges on the basis of market liquidity and market performance. Firms from countries with limited market liquidity and firms from countries with poorer market performance at the time of the listing are especially attracted to the U.S. market. For the regulatory aspect, I find that U.S. exchanges appear to be a preferred market for foreign firms that employed a Big 5 auditor but not for firms from IFRS adopted countries. Finally, conforming with the bonding prediction by Coffee (1999, 2002) and Stulz (1999), I show that the U.S. market, in general, is a cross-listing destination for foreign firms from countries with relatively weaker legal institutions.

After adjusting for the potential effects of the listing-decision determinants, the results from the pooled probit regression analysis illustrate two critical findings. First, I find evidence, consistent with SEC's belief, that preference for international listings on U.S. exchanges has improved after the adoption of Exchange Act Rule 12h-6. Foreign firms are on average more likely to pursue a U.S. cross-listing than stay non-cross-listing in the post-Rule 12h-6 regime. Second, I find that firms for which Rule 12h-6 is more likely to increase agency conflicts (i.e., firms from countries with weaker corporate governance structures) are more likely to list in the U.S. after the rule. This finding is in line with the prediction that the leniency introduced to the U.S. disclosure and reporting requirements via the new

Exchange Act could soften the U.S. legal standard and therefore make the U.S. market less intimidating to foreign firms with poorer governance qualities. These results are robust across all model specifications and corporate governance measures.

Using cross-sectional data of cross-listing activities on the U.S. and U.K. markets between 1998 and 2012, I establish an exchange choice model to capture an essential variation in cross-sectional preferences for the U.S. or the U.K. listing as a result of Rule 12h-6. The results from the cross-sectional probit regression analysis show that, after controlling for firm characteristics and other economic determinants of these firms' exchange choices, foreign firms are on average more likely to list in the U.S. relative to the U.K. after the passage of Rule 12h-6. In agreement with Pagano et al. (2002) and Sarkissian and Schill (2004), I also find that firms tend to be attracted to a particular exchange on account of geographic characteristics. For instance, Canadian firms are more likely to cross-list in the U.S., while Irish firms and firms that were formerly ruled or administered by the United Kingdom or were part of the British Empire are more likely to cross-list in the U.K. At the exchange level, I find that firms are more likely drawn to the U.S. relative to the U.K. owing to its stronger market performance.

This study provides both empirical and practical contributions. To the best of my knowledge, this study presents the first empirical evidence of the economic consequence of the Exchange Act Rule 12h-6 on the attractiveness of U.S. market as measured by the cross-listing activity. This study contributes to the empirical research on the costs and benefits of the Exchange Act Rule 12h-6, as evidenced by the flow and the characteristics of international listing companies that the new rule attracts to the U.S. stock exchanges. I also make an essential practical contribution by providing evidence that regulatory loosening could potentially create an unintentional loophole by endangering market quality. Leniency in the new deregistration requirements and processes could have made

investors suffer the costs of losing information and protection when currently-registered foreign companies terminate their Exchange Act registrations and reporting obligations in response to the new rule. As such, the influx of firms from weak legal institution countries, which generally are characterized by poorer governance practices and greater potential of agency issues, to the U.S. following the deregulation could be a sign of deterioration in the U.S. market quality, and this should raise questions as to whether the new Exchange Act Rule 12h-6 effectively strengthens the U.S. market competitiveness as intended.

The implications of this study are that the U.S. regulations and the market attractiveness are tightly related, and international listing flow is one possible indicator for valuating success in regulatory movements. A rigorous regulation proves to be a two-sided sword. It promotes raring degrees of perceived market quality, while at the same time it can dissuade some foreign firms from pursuing U.S. cross-listing. The reverse is also true: relaxing regulatory requirements can potentially demean the quality of a market as it is perceived by investors and could risk the U.S. market losing their prestige of being the world's market with the highest listing standard. With these possibilities, it is vital that government agencies place their highest attention to reactions of firms to past regulations. Historical market reactions, both intentional and unintentional, are critical for ensuring that U.S. regulations maximize and maintain the competitiveness of the U.S. markets in the future.

The remaining of the paper proceeds as follows: Section 2.2 provides a review of related literature and testable hypotheses. Section 2.3 describes the sample and variables. Section 2.4 presents and discusses the empirical findings. Section 2.5 concludes the paper and points to some paths for future research.

2.2 Review of related cross-listing literature and hypotheses development

2.2.1. Review of related literature

2.2.1.1. Equity financing, corporate governance, and importance of cross-listing

Without doubt, raising capital is one of the most challenging pursuits of any business. In a conventional situation, a firm may find it less challenging to finance its projects with debt relative to equity. This is because, with debt financing, financiers can assure of their certainties in getting back the returns of investments through a well-written contract with prespecified obligations. A debt contract, in general, contains formative requirements in which a borrower is obligated to make a predetermined stream of future payments to the lender in exchange for the lender's funds, and the lender occupies specific rights over the borrower's assets if the borrower defaults on a payment. Such a contract, therefore, takes care of a great deal of investment risk borne by debt financiers. Equity financing, in contrast, is not associated with any contractual agreements that an entrepreneur must make between himself and financiers. If not protected by laws, financiers have no certainty of getting returns on their investments. Risks borne by equity financiers in such a circumstance are, therefore, just perfect. With these reasons, raising funds via equity financing appears to be a difficult task for most businesses.

To gain better insights into the equity financing dilemma, Stulz (1999) provides an example of a firm with a large project which management believes to be profitable and must be financed. The project cash flows that management anticipates and the ones that outside investors believe the project to generate are not necessarily identical. Stulz explains that the discrepancy between the project's values assessed by management and prospect investors could exist for at least two reasons. The first cause of this discrepancy is called "information asymmetry" (see Akerlof, 1970). The nature of information asymmetry arises from the fact that information about a company is not shared perfectly throughout all

stakeholders, especially outside investors. Management, in general, possesses more or superior information of firms and their projects than do outsiders, and important information regarding business prospects tends to be severely withheld inside the company. Although there may be some occasions that managers may have to yield up the company's information to the public (i.e., when raising capital), managers may only make a minimal allocation or may make false information sharing. Without reliable and adequate information, outside investors are unable to assess the value of a firm's projects that truly reflects the firm's circumstances. As a result, the deviation in a firm's equity price from what managers expect is likely to occur, most likely in an unfavorable way. For example, Bhattacharya, Daouk, and Welker (2003) find that firms reside in countries with earnings opacity problems tend to experience very high costs of capital.

Besides the information problem, the divergence in valuations of project cash flow assessments could also occur due to the conflict of interests between investors and management, which is often referred to as the "agency problem" (see Coase, 1937; Fama and Jensen, 1983a, b; Jensen and Meckling, 1976). The agency problem occurs due to the nature of the business when decision making and risk bearing functions are separated. In a typical shareholder-manager relationship, as outsiders who not only have limited access to inside information of corporation and management but also have to bear the sole risk of their funds, shareholders face problems ascertaining whether management is acting in the best interests of the organization by making the best use of the firms' capital.

Besides managers, outside shareholders would also suffer the risk from expropriation by controlling shareholders, such as a business founder and his family, who own the majority of the outstanding shares in a company, thereby holding more control rights in the firm and more controlling power over the firm's managers. (Hereafter, I refer to both managers and

controlling shareholders as "the insiders." The terms "outside investors" and "minority shareholders" will be used interchangeably throughout the paper.)

Expropriation by insiders can take various forms. At one end, insiders can simply steal corporate's profits. In such case, outside investors are put at an absolute risk since the returns of their investments from financing firms will never occur. In reality, expropriation would, however, happen in a more subtle fashion such as executives' overpayment, wasteful projects engagement, and any non-contractible managerial benefits from running a company (e.g., perquisite consumption). After all, no matter how expropriation occurs, by not having the power to control the firms, outside investors are always put at a disadvantage. In actuality, no rational investors would be willing to invest their money in firms if protection for their rights in such a country is weak. Instead, those investors may prefer investing in government securities or, in the worst case, put their money in mattresses. Taken together, the presence of information and agency problems would hamper firms from raising sufficient capital for their business expansion. Even supposing they can raise the necessary funds, the existence of these two problems could make the new equity capital prohibitively expensive (Stulz, 1999).

Corporate governance comes into the picture here. Corporate governance involves mechanisms assuring outside investors of the certainty of getting the return on their investment (Shleifer and Vishny, 1997), and these mechanisms can occur either externally (i.e., laws and regulations) or internally (i.e., board structure). However, as proposed by Shleifer and Vishny (1997) and La Porta, López de Silanes, Shleifer, and Vishny (2000), among others, legal protections of investor rights appears to be the most effective approach to corporate governance. As Hart (1995) argues, investors get cash back from investing their money in the firms' projects only because they have the power to do so. In equity financing, this power, in the form of voting rights of shareholders, can be the power to

request an ongoing disclosure or the power to make a necessary corporate decision (i.e., to force dividend payments, to call for extraordinary shareholders' meetings, to select, remove, or change directors, to sue directors for expected expropriation, to stop managers from undertaking value-reducing projects, and to subscribe to new issues of securities on the same terms as the insiders). When these rights of investors are well-protected by law and can be effectively enforced by regulators, courts, or litigations, and when firms are obligated to commit to such governance practices, the expropriation technology becomes less efficient. Not only that the insiders can expropriate less, but the private benefits of control also become weakened (La Porta et al., 2000). After all, by shaping their corporate governance standards, the countries also shape the prospects of their external finance (La Porta, López de Silanes, Shleifer, and Vishny, 1998; La Porta et al., 2000). This country's action would not only facilitate the capital raising activities of its local companies but also allow these businesses to acquire funds in much better terms. Supporting this rationale, Dyck and Zingales (2004); La Porta, López de Silanes, Shleifer, and Vishny (1997); La Porta et al. (1998); Shleifer and Vishny (1997), and Shleifer and Wolfenzon (2002) find that securities markets of countries with strong legal protection and enforcement appear to be deep, liquid, and advanced. The empirical evidence also shows that firms having their equities traded in countries with robust investor protection systems are found to have cheaper costs of capital (Hail and Leuz, 2006, 2009) and better stock prices (Doidge, Karolyi, and Stulz, 2004; Doidge et al., 2009b; Duarte et al., 2014; La Porta, López de Silanes, Shleifer, and Vishny, 2002; Reese and Weisbach, 2002).

Despite the presence of benefits from having good corporate governance, it is surprising to find firms that resist governance improvement such as firms residing in countries with weak governance structures. Under normal circumstances, firms in such countries often find themselves well-off under their current governance regimes and therefore have less

desire to expose themselves to better governance systems. In a random occasion, there may be firms that are yearning to adopt good governance but unable to do so because of the cost-related issues or limitations of mechanisms necessary for governance improvement in their countries. Under such conditions, firms may find that they cannot merely rely on changes in their home country laws since the revision of investor protection in general requires radical changes in the legal system, which includes not only the changes in legal structure itself, but also the changes in political and cultural elements (Bebchuk and Roe, 1999; Roe, 2002).

Fortunately, financial globalization could offer one such solution for firms to leapfrog their local impediments to stronger laws necessary for stronger securities markets (Stulz, 1999). This is where cross-listing enters the picture. Cross-listing – also referred to as "foreign listing", "international listing", "dual-listing", or "cross-border listing" – is an important financial invention helping a firm seeking an overseas market for secondarily listing and trading its shares currently registered in a home market exchange elsewhere. Cross-listing provides a means for firms to opt in regulatory regimes of other countries, besides their jurisdictions. By cross-listing in countries of which corporate governance regimes are stronger, firms could attain the benefits of having robust governance as secured by other domestic firms domiciled in such countries.

2.2.1.2. Why do firms cross-list?

The role of cross-listing in circumventing difficulties of cross-border trading and its various benefits that foreign firms may obtain have made a large number of firms pursue this route. Supporting this view, Gagnon and Karolyi (2010) document that the total number of foreign listing across all exchanges has risen from only 2,738 in 2004 to 3,045 in 2008. Also, the total cross-border capital flows between U.S. residents and all other countries, measured by the sum of gross purchases by foreigners from U.S. residents and gross sales

by foreigners to U.S. residents of long-term domestic and foreign securities, reported by the U.S. Treasury International Capital shows a similar pattern. In 1979, the total cross-border capital flows were around $6 billion. The flows were over $800 billion by 1999 and reached $4.2 trillion by 2007. By the end of 2015, the gross capital flows rose to over $3.5 trillion.

This growing importance of cross-listings has led to the presence of several research initiatives to explain the motivation that has made firms seek this route. A large number of empirical studies have been conducted to uncover this issue. Due to variation in firms' and their countries attributes, it is not uncommon to observe the diversity in firms' cross-listing motives such as (1) to obtain access to cheaper capital (Hail and Leuz, 2006, 2009; Lins, Strickland, and Zenner, 2005a; Reese and Weisbach, 2002); (2) to improve liquidity (Chung, 2006; Eleswarapu and Venkataraman, 2006; Moulton and Wei, 2009; Silva and Chávez, 2008); (3) to broaden shareholder base (Pagano et al., 2002); and (4) to increase investors' recognition on firms' equities, visibility, or reputation (Baker, Nofsinger, and Weaver, 2002; King and Segal, 2009; Merton, 1987; Siegel, 2005).

Despite this discrepancy in the cross-listing literature, Karolyi (2006) points out in his survey study that "there is a unifying theme in these various initiatives in that they all emphasize the growing importance of corporate governance issues in the cross-listing decision" (p.141). Indeed, numerous studies across all research initiatives of cross-listings have cited the essence of corporate governance as the main driver behind all benefits that local firms may achieve via cross-listing. For instance, the explanation for cross-listing proposed by the "liquidity hypothesis" emphasizes the firms' desire to tap into a large pool of liquidity available in overseas markets as the motive for cross-listing decisions. Liquidity hypothesis, however, overlooks one major fact that matters – the role of laws and regulations of a cross-listing country on firms' cross-listing decisions. As Coffee (2002)

argues, in a cross-listing decision, firms must choose a market and a regulatory regime together as a bundle package and cannot detach their market choice from their choice of regulatory principles. Strong laws, stringent regulations, and all rigorous policies underlying trading rules are designed purposely to provide protections for outside investors against the expropriation by insiders. Without such sovereignties, outside investors have no way to assure the integrity of the financial markets where they are trading, which will, in effect, limit their confidence in trade and their trading activities altogether. After all, securities markets tend to be more developed and more liquid when the countries' corporate governance systems are robust (La Porta et al., 1997, 1998). With these means, firms cannot merely access a well-developed, liquid market while committing only with flimsy laws typically governing in a thin or undeveloped market.

A large number of studies have witnessed the argument that liquidity benefits would not emerge if no strong laws are backing the cross-listing markets. For example, Beny (2005) finds that countries with more restrictive insider trading laws have more diffuse equity ownership, more accurate stock prices, and more liquid stock markets. Similarly, La Porta, López de Silanes, and Shleifer (2006) show that interaction between the disclosure rules and the threat of liability through private enforcement facilitates stock market development. Cumming, Johan, and Li (2011) examine the importance of stock exchange trading rules for market manipulation, insider trading, and broker- agency conflict on market liquidity improvement. By investigating the differences in trading rules of 42 exchanges around the world, the authors find a strong positive connection between trading rules and liquidity. Together, these findings imply that various benefits of cross listings which motivate firms to pursue such routes, in fact, primarily stem from one common logic - the improvements in the corporate governance of the firms' new trading environments.

2.2.1.3. Bonding hypothesis

The emphasis of corporate governance as a unifying theme in various research initiatives for cross-listing has led to a popular initiative widely known as "bonding hypothesis" proposed by Stulz (1999) and Coffee (1999, 2002). The essence of bonding hypothesis relies on the role of corporate governance in mitigating information and agency problems. As discussed by Stulz (1999), the presence of agency conflicts and asymmetric information issues has constituted the intensity of equity financing risk. For all rational investors to invest their money in such circumstances, the firm's equities must be sold at a very deep-discounted price so that these investors can earn the rate of return that is high enough to compensate such risks. In short, a firm's cost of capital depends critically on its corporate governance quality.

Firms can improve their capital cost by raising the quality of their corporate governance. Though there are several ways that firms can do this to promote their corporate governance, the legal approach appears to be a key mechanism for governance revision (La Porta et al., 2000; Shleifer and Vishny, 1997). The fact that the robust legal protections can enhance the market for a firm's equities, and thereby improve its ability to finance the business, would have encouraged firms to seek out stricter regulatory environments. However, unfortunately, firms in many countries frequently cannot rely on legal changes in their jurisdictions due to many obstacles as discussed earlier. These impediments have, therefore, led to the growing importance of cross-listing as a solution for foreign firms seeking out the more robust regulatory environment. Coffee (1999, 2002) argues that cross-listing provides a means for firms to bypass political, cultural, and other impediments to stronger securities laws in their jurisdictions by "renting" the securities laws and enforcement in other countries where the presence of legal framework necessary for strong securities markets does exist. A more stringent regulatory environment of the cross-listing

countries, such as in the U.S., which includes higher disclosure and reporting requirements, and a more extensive degree of exposure to regulatory oversight, enforcement, class actions, and scrutiny of reputational intermediaries (i.e., underwriters, rating agencies, auditors, and securities analysts), has made it harder and more costly for insiders to extract private benefits of control from outside investors. Cross-listing, hence, represents an intention of company insiders to circumvent information and agency problems and would be perceived as a favorable management action. The bonding hypothesis predicts that global investors would respond to cross-listing events positively, as empirically witnessed by a decline in capital costs (Hail and Leuz, 2009; Stulz, 1999) and an increase in equity valuation (Gozzi, Levine, and Schmukler, 2008; Sarkissian and Schill, 2009). Still, the magnitude of such cross-listing benefits would depend critically on corporate governance of a firm's home and host countries, or to be more precise the improvement in corporate governance. For instance, with all else being equal, the U.S.-listed foreign firms from countries with weaker legal institutions would obtain more substantial benefits, such as higher equity valuation surprises, than do those from stronger governance countries.

Besides benefits, costs of cross-listing also come to play in many decision-making scenarios of the bonding theory, such as should a firm cross-list? If so, when and where? Costs of cross-listing consist of (1) listing fees and other expenses associated with listing procedures; (2) compliance costs to laws, regulations, and governance standards of a cross-listing market (e.g., audit fees and other administrative costs); (3) opportunity cost occurring from loss of insiders' opportunities to extract private benefits of control due to corporate governance mechanisms of a cross-listing market (see, e.g., Ayyagari and Doidge, 2010; Doidge, 2004; Doidge, Karolyi, Lins, Miller, and Stulz, 2009a); and (4) opportunity cost of staff burdens from spending more time and resources in order to comply with the new laws, regulations, and requirements. The same rationale applied to the benefits

would also hold true for the cost aspect. With all else being equal, costs of cross-listing would depend on the degree of divergence of a firm's corporate governance structure from that of a cross-listed country. Firms would be subject to larger governance improvement and transitioning costs if there were wide discrepancies in governance structures between their homes and host markets. Also, insiders of foreign firms would suffer larger opportunity costs from loss of private benefits of control when the new listing environments impose a drastic improvement in transparency to the firms' business practices.

Taken together, benefits and costs of cross-listing stemming from an improvement in corporate governance play a significant role in determining a listing decision of a foreign firm. Firms will cross-list if and only if all costs associated with a listing location are outweighed by the corresponding benefits. And, among all market choices, a firm will choose a listing location offering the highest *net benefits*.

2.2.1.4. Regulatory competition among financial markets and the introduction of Exchange Act Rule 12h-6

The U.S. market was once a popular destination for foreign companies seeking to raise capital abroad. The rapid growth in cross-listing activities on the U.S. exchanges observed in the 1990s had, however, dropped significantly at the turn of the new decade. Interestingly, although it is more reasonable to think that the slump of international listings in the U.S. market could come from the concurrent action of multiple causes, instead of one single factor, the higher regulatory costs imposed by the Sarbanes-Oxley Act (SOX) appears to be a popular conventional wisdom for this phenomenon (see, e.g., Duarte et al., 2014; Iliev, 2010; Litvak, 2007a,b, 2008; Marosi and Massoud, 2008; Zhang, 2007; Zingales, 2007).

In a general sense, insiders of a company would view the expensive regulatory compliance costs sensible as long as the benefits gained from maintaining a listing in the

U.S. (i.e., outside financing benefit, liquidity improvement benefit) remain persistent and above the costs. Higher rewards to exchange-listed companies following the SOX enactment (i.e., positive stock price reaction (Li, Pincus, and Rego, 2008) and corporate valuation improvement (Doidge et al., 2009b)) should still make a U.S. cross-listing decision justifiable, especially among foreign firms seeking the legal bonding benefits. Instead, many scholars and government agents view that, among all, the burdens and uncertainties of escaping the reporting obligations and the corresponding costs could serve as a critical determinant rendering the U.S. market unattractiveness (SEC, 2007).

By rule, an FPI will be subject to SEC registration and ongoing disclosure requirements of the Exchange Act of 1934 once pursuing a U.S. cross-listing if it meets any of the following circumstances: (1) *Securities exchange listing - Section 12(b):* A class of a firm's equity securities is listed on a national securities exchange; (2) *Issuer size – Section 12(g):* The issuer's class of equity securities are held by at least 300 U.S. record holders and a total of either (a) at least 2,000 record holders worldwide or (b) at least 500 persons who are not accredited investors worldwide. Also, the FPI has the total value of assets as of the end of the fiscal year exceeding $10 million; and (3) *Public offering – Section 15(d):* An FPI that has issued equity securities to the public in a registered offering even if it has currently not listed on any securities exchange or crossed the size threshold of Section 12(g) also become subject to Section 15(d) of the Exchange Act (Bell, 2016; Eiger, Humphreys, and Tanenbaum, 2016; SEC, 2013).

An issuer desired to terminate its registration of equity securities can do so by first filing a Form 25 to initiate the delisting/deregistration process if it has a class of securities registered under Section 12(b). This action would automatically remove a class of a firm's equity securities from an exchange listing within ten (10) days. The deregistration under section 12(b) would not occur for another 80 days. Until the termination of reporting

obligation under section 12(b) is effective 90 days after Form-25 filing, any reporting obligation that the issuers once have still apply.

Once delisting under Section 12(b), an issuer must verify whether it has reporting obligations under Section 12(g) and/or 15(d). If it does, the issuer must also file a Form 15 which will terminate its registration under Section 12(g) and *suspend* its reporting obligations under Section 15(d). The essential qualification for an FPI to file the Form 15 with the SEC is that it must meet the size threshold as stated in Section 12(g). The critical adversity of this size criteria faced by an FPI is that the issuers must "look through" the record ownership of brokers, banks, dealers, and all other nominee accounts on a "worldwide" basis and count the number of individual accounts of U.S. customers to determine the number of beneficial owners who are U.S. residents. Even more challenging, the former rule does not allow foreign issuers with Section 15(d) registration, who basically are those once conducting an SEC-registered offering, to *terminate*, but to merely *suspend*, their ongoing reporting obligations, even after their number of U.S. record holders are down below the threshold. To be specific, as long as the class of securities is still outstanding, the issuers must continually submit an annual report showing the number of U.S. record holders with the SEC. An issuer's reporting duties would automatically resume if at the end of any fiscal year the number of U.S. residents holding the issuer's securities exceed 300.

In response to the concern that the burdens and uncertainties associated with the exit process might act as deterrence to listing activities in the U.S. markets, on March 21, 2007, the Securities and Exchange Commission unanimously adopted the new Exchange Act Rule 12h-6 permitting a foreign private issuer of equity securities to *terminate* its Exchange Act registration and reporting obligations. The new rule also introduced a more achievable, alternative qualification benchmark "relative average daily trading volume", in addition to the revised head-count measure. In details, an FPI can terminate its registration and

reporting obligations if (1) its U.S. average daily trading volume (ADTV) for a recent 12-month period is lower than 5% of the ADTV of that class of securities worldwide for the same period, or if its U.S. holders of record is less than 300 under the modified counting method which limits its U.S. holders counting to accounts located only in the U.S. and their jurisdictions; (2) it meets the *Prior Exchange Act Reporting Condition*: the FPI must have been an Exchange Act reporting firm for at least 12 months prior to the deregistration, filed and provided all reports required for this duration, and has filed at least one annual financial report; (3) it satisfies the *Home Country Listing Condition*: the issuer must maintain the listing of its subject class of equity securities on one or more exchanges which constitutes its primary trading market during the recent twelve-month period prior to the Form 15F filing; (4) it has contented the *One-Year Dormancy Condition*: the FPI must not have sold securities in the U.S. in a registered offering within the twelve-month period prior to its termination from the Exchange Act[3]; and (5) the *One-Year Ineligibility Period after Delisting or Termination of ADR Facility* is met. An FPI must wait at least one year after delisting from any U.S. exchanges or terminating its ADR program before it may deregister a class of equity securities under the trading volume benchmark (SEC, 2007).[4] Taken together, the SEC believes that the removal of restrictions on exiting the U.S. market and reporting obligations of foreign issuers through the adoption of new Rule 12h-6 will revive the attractiveness and competitiveness of the U.S. market on an international scale.

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[3] Exceptions for securities transactions include securities sold in Rule 144A and Regulation S offerings, non-underwritten offerings by selling shareholders, offerings to employees, offerings due to the exercise of outstanding rights, warrants, or convertible securities, or offerings under a dividend or interest reinvestment plan.

[4] The one-year waiting period requirement will not apply if the U.S. ADTV of the relevant class of equity securities at the time when the FPI delisted that class of equity securities or ceased its ADR facility did not exceed 5% of the worldwide ADTV for the recent 12 months.

2.2.2. Hypothesis development

Becoming effective on June 4, 2007, Rule 12h-6 is considered "the first significant *deregulation* of U.S. disclosure requirement since the passage of the 1933/1934 Exchange and Securities Acts" (Fernandes, Lel, and Miller, 2010, p.130). The emphasis of the Rule 12h-6's passage lies on the fact that it helps withdraw several significant restrictions on the Exchange Act requirements governing the termination of registration and reporting obligations of foreign firms.

Not only that the new rule ameliorates the termination process so that a foreign issuer could permanently escape its reporting obligations, but the revised rule also lowers costs of regulatory compliance in connection with Exchange Act deregistration. The more certainty and flexibility in the exit process brought by the new rule should over time reduce a deterrent to foreign firms accessing the U.S. capital markets. In effect, I expect to see an improvement in the likelihood of U.S. cross-listings after the new rule becomes effective (hereafter, PostRULE period). This leads to the following hypothesis:

H1: The likelihood of a U.S. listing of a foreign company would be higher in the post-Rule 12h-6 period.

Because regulations can be a two-sided sword, it is worth looking at the potential drawbacks that the Exchange Act Rule 12h-6 might develop. From the legal bonding theory, two critical conditions imposed by the passage of Rule 12h-6, including (1) permitting foreign firms with Section 15(d) registration, for the first time, to terminate their reporting obligations; and (2) easing the qualification requirements for deregistration by revising the old head-count method through limiting the scope of counting, and introducing an ADTV method as an alternative qualification benchmark could adversely affect the U.S. market in two related aspects. First, the fact that the new Exchange Act permits foreign

firms to escape the U.S. market and its legal enforcement freely can undermine the dependability and quality of the U.S. legal protection system which is fundamental to the virtue of U.S. cross-listing as posited by the bonding theory. Because the bottom line of legal bonding theory builds on the belief that the fear of prosecution and punishment by the SEC would have made cross-listed firms to strictly adhere to the U.S. laws, allowing firms to flee the SEC's oversight and enforcement with less effort would disparage the exceptional role of the U.S. market in the legal bonding theory of cross-listing. If this is the case, the U.S. market runs the risks of losing its prestige of being a benchmark market for the world's highest listing standards and its reputation for being a rare market to offer the authentic benefits from legal bonding (i.e., lower costs of capital, premium valuation) to a cross-listed firm.

Second, the passage of Rule 12h-6 that makes it easier for foreign firms to terminate their reporting obligations with the SEC through the use of softer qualification requirements for deregistration could reduce the hardness of insider's commitment to U.S. disclosure regulations and legal provisions. If so, the gateway to slip away the U.S. legal enforcement made available by the new rule can complicate a moral hazard problem in a cross-listing. Interestingly, the legitimacy of legal bonding hypothesis, in fact, has been challenged by several authors even before the adoption of Rule 12h-6. Licht (2003), for instance, points out that several exemptions in the U.S. corporate governance system made for a cross-listed firm have set the rules and regulations mandating equity issuers in the United States to two: one is for U.S. domestic issuers, and another is for non-U.S. companies. Evidence from Siegel (2005) focusing on Mexican firms cross-listed in the U.S. further suggests that the SEC's enforcement against U.S. cross-listed firms has been rare, yet ineffective. The author concludes his evidence as support for reputational bonding hypothesis.

To that end, if the validity of the legal bonding in the U.S. is questionable even in the robust legal environment, such as in the pre-Rule 12h-6 period, the Exchange Act Rule 12h-6's passage would without doubt worsen one's belief on the efficacy of legal bonding. The U.S. market could lose its role as an exclusive listing location catering firms with superior corporate governance qualities. Taken together, this leads to the following hypothesis:

H2: Among others, Rule 12h-6 would have made the U.S. exchanges more attractive to firms residing in countries with poor corporate governance regimes.

2.3. Data and variables

2.3.1. Sample Construction

Because this study intends to examine the impact of Exchange Act Rule 12h-6 on the listing activities in the U.S. market, and because the scope of this new rule is only limited to U.S.-exchange cross-listed firms, my treatment firms are limited to foreign firms that list their shares on the SEC regulated markets, including the NYSE, Nasdaq, and Amex The listing venues of the sample firms include ordinary listing, American Depositary Receipt (ADR) Level II and III, and New York Registered Share. Foreign companies accessing the U.S. capital by means of a Rule 144a private placement and other OTC issues via OTC Markets Group are omitted since the SEC registration requirements, several disclosures and reporting regimes, and regulatory bodies of the Securities Act, including SOX, and the amendment in the SEC deregistration rule through Rule 12h-6 do not apply to these firms. Due to its tiny number, I do not include foreign firms listed on the OTC Bulletin Board (OTCBB) market. I, however, include the OTCBB-listed foreign firms in the robustness check and the results remain consistent with the main findings.

I construct the list of companies with U.S. exchange listings between January 1, 1998 and December 31, 2012. This period of study enables me to investigate the pre- and post-effect of the Rule12h-6 amendment on U.S. cross-listing premiums and to disentangle the effect of the SOX Act, which remains effective after the Rule 12h-6 enactment, from the rule effect. I gather the list of foreign companies cross-listed on the U.S. exchanges from two sources. First, I collect the list of firms issuing ADRs or New York Registered Shares both active and inactive status from the websites of four major banks, including Citibank, the Bank of New York Mellon, JP Morgan, and Deutsche Bank. For an ordinary listing, I obtain the list of firms from the exchanges' websites and Center for Research in Security Prices (CRSP). The data set from CRSP helps compliment the sample of foreign listings with both active and inactive foreign companies listed their shares on U.S. exchanges either by ordinary or ADR issues. The CRSP company share code number 12 represents an ordinary listing while share code number 30 and 31 represent an ADR listing.

I manually cross-check and verify domicile countries of foreign firms, U.S. listing date, changes in U.S. listing status, including upgrading, downgrading, and delisting, and delisting date (if any), by consulting with the Form 20-F, 10-K, or 40-F from the SEC filing as well as the companies' websites. For any firm which initially lists on one major exchange and later moves to another, I keep the listing date, exchange, and ADR program of the first admission. I apply many selection criteria to the raw sample to ensure a more uniform set of sample data used in the analysis. First, I exclude a firm which initially accesses the U.S. through either a Rule 144A private placement or an OTC listing (or so-called ADR Level I) and later upgrade itself to ADR Level II or Level III since I am mainly interested in the effect of changes in U.S. regulations in initial profile of entrants at the point of listing, not the profile deviated from the initial-entry after some exposure to the U.S. markets. Second, to avoid any potential exogenous effect from other international listings, a firm that has foreign listings in other countries either

before the U.S. listing or in parallel with the U.S. listing within six months will also be removed. Third, all sample firms must have data available on total assets, total sales, and market capitalization in either their first- or second-year post-listing. Fourth, I drop financial firms, investment funds, REITs, and trusts out from the sample since highly leveraged and heavily regulated financial institutions can behave differently from firms in other industries. Lastly, firms incorporated in offshore tax havens, including Bermuda, the Cayman Islands, Jersey, Marshall Islands, British Virgin Islands, Bahamas, U.S. Virgin Islands, the Netherlands Antilles, the Isle of Man, Guernsey, and the Falkland Islands are also removed.

As argued by Hochberg, Sapienza, and Vissing-Jørgensen (2009), studying the effect of regulation has proven to be challenging mainly because of the lack of a control group of comparable, publicly listed companies that are immune to the new regulation. To address this issue, I employ the non-cross-listed firms as the controlled group in the listing decision model owing to two reasons. First, because a non-cross-listed firm is a foreign firm that has thus far not decided to cross-list elsewhere, analyzing the association between the Rule 12h-6 enactment and the change in the decision of a non-cross-listed firm from remaining local to cross-listing in the U.S. would shed light on if Rule 12h-6 can improve the U.S. market attractiveness as the SEC intended. Second, due to the fact that a non-cross-listed firm is defined as a foreign firm that is domiciled in the same country as a U.S.-listed foreign firm, comparing these two groups of firms can control for the effect of any time-invariant factors and any common trends in a particular country that may affect a decision to cross-list of a foreign firm when examining the effect of Rule 12h-6. I construct the non-cross-listed firm sample by keeping all firm-year observations from 1998-2012 of firms with the same home countries as U.S. cross-listed firms that have thus far never listed aboard. The similar selection criteria with a U.S. cross-listed firm group also apply to the non-cross-listed firms.

To complete this study, I further investigate the economic impact of Rule 12h-6 using the exchange choice model employed by Piotroski and Srinivasan (2008). This additional angle of study should provide a better insight on how Rule 12h-6 affects the *relative* attractiveness of the U.S. market as captured by the change in locational listing preference of foreign firms. Following Doidge et al. (2009b), Duarte et al. (2014) and Piotroski and Srinivasan (2008), I choose the London Stock Exchange's (LSE) Main Market as the U.S.-exchange alternate marketplace for international listings owing to their similarities in market attributes and their differences in mandatory regulations.

To create the U.K. cross-listing sample group, I gather the list of foreign firms with U.K.'s LSE Main Market listing via ordinary listing or depositary receipt between January 1, 1998 and December 31, 2012 by advising the Official London Stock Exchange Main Market Historical Statistics data. I disregard foreign firms listing on the LSE's Alternative Investment Market (AIM) since listing requirements for trading on AIM are very minimal and weak compared to the listing standards of the LSE's Main Market or the U.S. stock exchanges. In particular, requirements such as prior trading, minimum market capitalization, minimum public float, transaction approval from the prior shareholders, or admission documents to be pre-screened by the UKLA or the exchange are unrequired for listing on AIM. I obtain the listing dates of the LSE's Main Market cross-listed companies from Data stream and manually cross-checked them with the LSE's website. Foreign firms that are cross-listed on both a U.S. exchange and a U.K. Main Market within six months are excluded. Additionally, a firm will be considered a U.S. (U.K.) cross-listed company only if it has never been cross-listed on the U.K. (U.S.) market to avoid a duplicate count.

2.3.2. Data and Variables

The summary of all variables discussed in this section as well as the sources of data are defined in Table 2.1.

Table 2.1: Variable Definitions

Sales growth and Book-to-market are winsorized at the 1st and 99th percentiles to reduce the potential impact of outliers.

Variable	Definition
US listing indicator	A binary variable that indicates a firm's U.S. cross-listing status. In the listing decision model, the US listing indicator equals one in all firm-year observations that a firm cross-lists and stays cross-listing on a U.S. exchange and zero otherwise. In the exchange choice model, the US listing indicator equals one if a firm cross-lists on a U.S. exchange and zero if a firm cross-lists on a U.K. exchange. A firm is considered a U.S. (U.K.) cross-list firm if it is admitted to a U.S. (U.K.) exchange prior to being admitted to a U.K. (U.S.) exchange. Firms that cross-list on both exchanges within six months apart are excluded. *Sources: The Bank of New York, Citibank, JP Morgan, Deutsche Bank, NYSE, NASDAQ, London Stock Exchange's Main Market, Center for Research in Security, Prices (CRSP), Companies' websites, SEC filings from EDGAR, and Datastream.*
PostRULE	A binary variable that indicates the Rule12h-6 enactment event on June 4th, 2007. In the listing decision model, PostRULE equals one in all years from 2007 and zero otherwise. In the exchange choice model, PostRULE equals one if a firm cross-lists on a U.S. exchange or a U.K. Main Market on and after June 4th, 2007 and zero otherwise.
PostSOX	A binary variable that indicates the Sarbanes-Oxley Act legislation event on July 30th, 2002. In the listing decision model, PostSOX equals one in all years from 2002 and zero otherwise. In the exchange choice model, PostSOX equals one if a firm cross-lists on a U.S. exchange or a U.K. Main Market on and after July 30th, 2002 and zero otherwise.
Revised Anti-Director Right index (ADRI)	The index is an updated version of the original La Porta et al. (1998) Anti-Director Right index which has been widely used as a country's corporate governance measure (Doidge, 2004). The index indicates the quality of laws as they are written, such as how strongly the legal system favors minority shareholders against managers or dominant shareholders in the corporate decision-making process, but not as they are really enforced. The index ranges from zero to five. Higher values indicate that minority shareholders have more rights and better protection. *Source: Djankov et al. (2008)*
Efficiency of the judicial system	The index measures \the efficiency and integrity of the legal environment as it affects business, particularly foreign firms" produced by the country risk rating agency International Country Risk. The index ranges from zero to ten. Higher values indicate higher efficiency levels judicial system. *Source: La Porta et al. (1998)*
Ownership concentration	Average percentage of common shares owned by the top three shareholders in the ten largest non-financial, privately-owned domestic firms in a given country. A firm is considered privately-owned if the State is not a known shareholder in it. *Source: La Porta et al. (2006)*
Canada	A binary variable that equals one if a foreign firm is incorporated in Canada, and zero otherwise.

Table 2.1 (continued)

Variable	Definition
Emerging	A binary variable that equals one if a foreign firm is incorporated in a country that is not classified by the World Bank as a develop country, and zero otherwise.
UK colony	A binary variable that equals one if a foreign firm is incorporated in a country that formerly ruled or administered by the United Kingdom or part of the British Empire, and zero otherwise.
IFRS adoption	A binary variable that equals one if a firm is required by its home country to prepare its annual reports in compliance with the IFRS standard, and zero otherwise. *Source: Worldscope*
Home stock market turnover	Value of domestic shares traded in a firm's home country divided by the stock market capitalization. *Source: World Bank WDI database*
Home stock market cap/GDP	Stock market capitalization of a domicile country of a cross-listed company divided by the country's gross domestic product (GDP). *Source: World Bank WDI database*
Diff US-UK market return	Diff US-UK market return is the difference in 12-month market returns preceding the cross-listing month between the corresponding U.S. exchange and the U.K. Main Market (for a U.S. cross-listed firm) or between the U.S. market as a whole and the U.K. Main Market (for a U.K. cross-listed firm). The annual market return is constructed from the price index of a given market, including NYSE composite index, NASDAQ composite index, NYSE Amex composite index, S&P 500, and FTSE All-Share index. *Source: Stock Markets 'websites*
Diff US-UK liquidity	Diff US-UK liquidity is measured as the difference between the value of shares traded (scaled by the exchange's market capitalization) on a given U.S. exchange and the value of shares traded (scaled by the exchange's market capitalization) on the U.K. Main Market in the month of cross-listing. *Source: Stock Markets 'websites*
Diff US-UK trade in home country	Diff US-UK trade in home country is a difference in the sum of imports and exports between the home country and the United States and the sum of imports and exports between the home country and the United Kingdom, scaled by the home country's GDP. *Source: The U.S. Department of Commerce, Bureau of Economic Analysis (http://www.bea. gov) for the United States and The Office for National Statistics (http://www.ons.gov.uk) for the United Kingdom*
Diff US-Home stock	Diff US-Home stock market return is the difference in the annual market returns between the U.S. and home stock markets. The US annual market return is constructed from the S&P 500 price index, whereas the firms' home market return is constructed from the MSCI price index of a given country. *Source: Chicago Board Options Exchange (CBOE) for historical S&P 500 price index (http://www.cboe.com/SPX) and MSCI website*

Table 2.1 (continued)

Variable	Definition
US domestic listings	Total number of new listings by US domestic firms by year *Source: Initial Public Offerings: Updated Statistics by Professor Jay R. Ritter*
Big 5 auditor	A binary variable indicates whether a firm employed a Big 5 auditor. In the listing decision model, Big 5 auditor equals one in a firm-year observation that a firm employed a Big 5 auditor and zero otherwise. In the exchange choice model, Big 5 auditor equals one if a firm employed a Big 5 auditor around the time of U.S. or U.K. cross-listing and zero otherwise. *Source: Worldscope and Compustat*
Total assets	Total assets are used as a proxy for firm size and is in U.S. dollar. It is also adjusted for inflation. *Sources: Worldscope, World Bank WDI database*
Sale growth	Sale growth is the two-year geometric average of sale growth. Sale growth is estimated from the inflation-adjusted sales in local currency. *Sources: Worldscope, World Bank WDI database*
BTM	Book-to-market is the ratio of book equity to market equity. *Sources: Worldscope*

2.3.2.1. Dependent variable - US listing indicator

To investigate if preferences for international listings on U.S. exchanges has improved as a result of the Exchange Act Rule 12h-6, I employ two models. In the listing decision model, I compare a decision to cross-list on a U.S. exchange against a foreign company's decision to remain local. The change in a likelihood of cross-listing between the pre and the post-Rule periods should enlighten whether the removal of burdens on the exit process made by the new Exchange Act could promote the U.S. market attractiveness as the U.S. authorities intended. Under this circumstance, the *US listing indicator* equals one in all firm-year observations that a firm cross-lists and stays cross-listing on a U.S. exchange and equal zero in all firm-year observations before the U.S. cross-listing event and after the delisting event, if any.

In the exchange choice model, I examine a firm's exchange choice *given* the firm's decision to cross-list on a high-profile exchange. The result from the exchange choice model

would further give us an understanding of the change in the U.S. market *relative* attractiveness as a result of Rule 12h-6. To that end, I assess listing activity on U.S. exchanges against the activity on the U.K. Main Market. In this case, the *US listing indicator* equals one if a firm cross-lists on a U.S. exchange and zero if a firm cross-lists in the U.K. I disregard all firm-year observations before and after the cross-listing event year.

2.3.2.2. Regulatory event variables

The U.S. regulatory events of interest in this study are regulations that U.S. foreign private issuers must comply with when pursuing U.S. cross-listing and could impact listing decisions of these issuers, especially on listing-timing and listing-location perspectives. In particular, these regulations include the announcement of the SOX Act in 2002 and the enactment of the Exchange Act Rule 12h-6 in 2007. Even though the main regulatory event of interest in this study is the amendment of the Exchange Act Rule 12h-6 in 2007, it is important to include the announcement of the SOX Act in 2002 in the examination. The fact that the details in the SOX Act remains fully effective and untouched by the new Exchange Act of 2007 would mean that the impact of the Rule 12h-6 enactment on a foreign firm's listing preference observed after 2007 must derive from the concomitant effect between the SOX Act and Rule 12h-6.

To disentangle the impacts of these two regulations on the listing activities on the U.S. exchange, I construct two binary variables, *PostSOX* and *PostRULE*, with the assigned value of one for the years after 2002 and for the years after 2007, respectively, and value of zero otherwise. In essence, the coefficient of *PostSOX* represents how likely that a foreign issuer will pursue its cross-listing in the U.S. after the SOX enactment, compared with the pre-SOX period. According to prior research, with the fact that SOX raises corporate governance standards and imposes significant regulatory costs to all U.S. exchange-listed firms, I expect to observe a decline in U.S. cross-listings post-SOX (Duarte et al., 2014; Zingales, 2007),

indicated by a negative coefficient of *PostSOX*. Similar to the *PostSOX* variable, the coefficient of *PostRULE* represents how likely it is a foreign issuer will pursue its international listing in the U.S. in the post- Rule 12h-6 period, compared with the period before the enactment of the rule. As previously mentioned that the objective of the new Exchange Act legislation is to eliminate disincentives found in deregistration requirements for non-U.S. companies, it is, hence, likely that the listing activities in the U.S. market, in general, would pick up post Rule 12h-6. The positive coefficient of *PostRULE* in both parts of the analyses is, therefore, expected. Nevertheless, the new deregistration requirements which allow foreign firms to escape the U.S. market with much less effort could create an unintentional loophole by attracting more listing activities of poor-quality firms, which once avoided U.S. cross-listings because of the concern about termination issue. As a result, a more pronounced negative result should be anticipated among the coefficients of the interaction terms between *PostRULE* and a corporate governance measure.

2.3.2.3. Corporate governance variables

Corporate governance of foreign firms' home countries is of importance in this study. It represents the benefits and costs that firms could perceive from each listing location and could, therefore, determine the variation in listing decisions of a company as a consequence of changes in U.S. regulations. To control for the variation in cross-listing decision that may arrive from the corporate governance quality of a firm's jurisdiction, I include three corporate governance measures that are widely used in the literature, including the *Revised Anti-Director Rights Index*, the *Efficiency of the judicial system*, and the *Ownership concentration*, in the model (see, e.g., Doidge et al., 2004, 2009b; Doidge, Karolyi, and Stulz, 2010; Duarte et al., 2014; Fernandes et al., 2010; Ghosh and He, 2017; Marosi and Massoud, 2008). The *Revised Anti-Director Rights Index* is an updated version of the original La Porta et al. (1998) Anti-Director Right index which has been widely used as a

measure of the quality of corporate governance as written by law. The *Revised Anti Director Rights Index* obtained from Djankov, La Porta, Lopez-de Silanes, and Shleifer (2008) provides a better measure of minority shareholder rights by interacting the original *Anti-Director Right Index* with a measure of how well laws are enforced using the "public enforcement index" of Djankov et al. (2008). The *Efficiency of the judicial system* from La Porta et al. (1998) measures "the efficiency and integrity of the legal environment as it affects business, particularly foreign firms" produced by the country risk rating agency, International Country Risk. The index ranges from zero to ten. Higher values indicate higher efficiency levels judicial system. Obtained from La Porta et al. (2006), the *Ownership concentration* is an average percentage of common shares owned by the top three shareholders in the ten largest non-financial, privately-owned domestic firms in a given country. Higher values would hence indicate weaker corporate governance.

In addition to these three measures, I also use the *Emerging* indicator variable to capture the quality of corporate governance in a firm's country. As suggested by the literature, a developing country tends to have legal institutions that are weak and the degree of government intervention and corruption that is relatively high, the *Emerging* indicator variable could be a legitimate alternate governance measure. The variable is assigned with the value of one if a foreign firm resides in a country that is not classified by the World Bank as a develop country, and zero otherwise.

2.3.2.4. Other control variables - Firm-specific variables

To control the variation in a cross-listing decision which may arise from other time varying factors at the firm level, I adjust for variation in firm size, growth, valuation, and capital needs. To be specific, I use the natural logarithm form of inflation-adjusted *Total assets* to proxy for a firm's size and its ability to absorb costs associated with cross-listing and regulatory compliance. In general, small firms tend to have less ability to absorb cross-listing

costs, therefore may prefer to remain local or prefer a cross-listing location where costs, especially compliance costs, are not too expensive. I also control for the need for external finance since firms would benefit more from U.S. cross-listing if they need U.S. capital to finance their expansion (Lins, Strickland, and Zenner, 2005b; Reese and Weisbach, 2002). I use *Sale growth* rate as a proxy for firms' capital needs. Sale growth is estimated as the natural logarithm form of the 2-year geometric average of annual inflation-adjusted growth in sales. Also, because high-valued firms would have higher growth opportunities, these firms would be more likely to cross-list for the capital financing purpose. I thus control for the variation in cross-listing decision influenced by the firm valuation by using the *Book-to-market* ratio. All financial accounting data are primarily gathered from the Worldscope Database.

The expected costs of listing could also determine a firm decision to cross-list. These costs would be more substantial among the firms with weak corporate governance. Prior research finds that employing a high-quality auditor could promote a firm's corporate governance quality (Francis, Khurana, and Pereira, 2003; Wang, Wong, and Xia, 2008). Following Piotroski and Srinivasan (2008), I use the *Big 5 auditor* indicator variable to capture the firm's corporate governance quality and the expected costs of cross-listing. The *Big 5* variable is a binary variable that indicates whether a firm employed a Big 5 auditor. In the listing decision model, the *Big 5 auditor* variable equals one in all firm-year observations that a firm employed a Big 5 auditor, and zero otherwise. In the exchange choice model, the *Big 5 auditor* variable equals one if a firm employed a Big 5 auditor around the time of U.S. or U.K. cross-listing and zero otherwise.

2.3.2.5. Other control variables - Exchange-specific variable

I control for cross-listing incentive which may arise from changes in market conditions of an international market by using *Market return* data of the U.S., home, and U.K. markets. I specifically include the relative difference in market return by including *Diff Market Return*

in the models. In the listing decision model, the *Diff Market Return* is the difference in the annual market returns between the corresponding U.S. exchange and the home market. While, in the exchange choice model, the *Diff Market Return* is the difference in the annual market returns between the corresponding U.S. exchange and the U.K. Main Market. I construct market return from the price index of a corresponding market on which a firm is cross-listed or the price index of the primary market in a firm's home country. The market price indices used in this study include NYSE composite index, Nasdaq composite index, NYSE Amex composite index, FTSE All-Share index, and an MSCI price index of each home country.

Because a market condition can also present in the form of its liquidity, I compliment my analysis by adding the natural logarithm form of one plus *Home stock market turnover i*n the models. *Home stock market turnover* is the value of domestic shares traded in a firm's home country divided by the market capitalization. I also control for the relative difference in market liquidity between the U.S. and the U.K. market in the exchange choice model by including the *Diff US-UK market liquidity*. *Diff US-UK liquidity* is measured as the difference between the value of shares traded (scaled by the exchange's market capitalization) on a corresponding U.S. exchange and the value of shares traded (scaled by the exchange's market capitalization) on the U.K. Main Market in the month of cross-listing.

At the exchange level, I also control for the effect of contemporaneous growth in listing activities in the U.S. market by including the *US domestic listings* variable. According to literature, foreign firms tend to be drawn to an exchange experiencing a strong, contemporaneous growth in new domestic listing (Pagano et al., 2002). To capture this effect, I follow Piotroski and Srinivasan (2008) and incorporate the *US domestic listings* variable, which measures the number of new domestic listings in the US exchanges, into the listing decision model.

2.3.2.6. Other control variables - Country-specific variables

To control for time-varying country effect, I include the natural logarithm form of one plus *Home market cap/GDP*, in the models. *Home market cap/GDP* is the stock market capitalization of a domicile country of a cross-listed company divided by the country's gross domestic product (GDP). This macroeconomic data comes from the World Bank WDI Database. I also control for the variation in cross-listing decisions that may arrive from the difference in accounting standards between a home and a cross-listing country. The evidence from Chen, Ng, and Tsang (2014), for instance, shows that firms from mandatory International Financial Reporting Standards (IFRS) adoption countries are attracted to countries also mandating IFRS. To account for this effect, I include *IFRS adoption*, which is a binary variable that equals one if a firm is required by its home country to prepare its annual reports in compliance with IFRS, and zero otherwise.

To account for a particular exchange preference on account of geographic characteristics, I include the *Canada* indicator variable in the listing decision model and the exchange choice model. I also include the *Ireland* and the *UK colony* indicator variables in the exchange choice model. These three groups of firms are individually determined because (1) firms belonging to these countries constitute the largest number of cross-listed firms in the sample; and (2) each country has a close economic and political relationship with either the U.S. (Canada) or U.K. (Ireland and UK colony). A *Canada* (*Ireland*) indicator is a binary variable with value of one if a foreign issuer is domiciled in Canada (Ireland) and value of zero otherwise. *UK colony* is a binary variable that equals one if a foreign firm resides in a country that was formerly ruled or administered by the United Kingdom or part of the British Empire, and zero otherwise.

Lastly, I incorporate the *Diff US-UK trade in home country* variable to control for the variation in a firm's exchange choice decision that may arrive from the closeness in trade

between its home country and the cross-listing market. *Diff US-UK trade in home country* is a difference in the sum of imports and exports between the home country and the United States and the sum of imports and exports between the home country and the United Kingdom, scaled by the home country's GDP.

2.3.3. Summary statistics

Table 2.2 reports summary statistics for the main variables employed in the analysis using all firm-year data of the U.S. cross-listed and non-cross-listed sample firms.

Table 2.2: Summary Statistics

This table presents summary statistics for the main variable employed in the analysis. The sample includes firm-year observations of foreign firms that cross-listed on U.S. exchanges and foreign firms from the same domicile countries that do not cross-list aboard between 1998 and 2012. Financial firms, investment fund, or trusts and firms incorporated in offshore tax havens are excluded. The definition of all variables is in Table 2.1. Sale growth and book-to-market ratio are winsorized at 1 and 99 percentiles.

	Obs	Mean	Median	Std. Dev	5th percentile	95th percentile
US cross-listing indicator	104320	0.0357	0.0000	0.1855	0.0000	0.0000
Total assets (Bil. USD)	104320	1.5640	0.2519	7.0679	0.0170	5.8290
Sale growth	104320	0.0348	0.0323	0.1882	-0.2774	0.3359
Book-to-Market ratio	104320	1.1259	0.8224	1.0193	0.1539	3.1591
Big 5 auditor	104320	0.3045	0.0000	0.4602	0.0000	1.0000
Revised Anti-Director Right index	104126	3.8168	4.5000	1.2869	1.0000	5.0000
Efficiency of the judicial system	102135	8.7424	10.0000	1.5587	6.0000	10.0000
Ownership concentration	89327	0.3229	0.2800	0.1463	0.1800	0.5800
IFRS adoption	104320	0.2197	0.0000	0.4141	0.0000	1.0000
Diff US-Home stock market return	104320	-0.0280	0.0076	0.2504	-0.5761	0.2852
Home stock market turnover	104320	0.9968	0.8559	0.5765	0.3005	2.0502
Home stock market cap/GDP	104320	88.9822	74.6007	56.8143	33.1202	179.8633
US domestic listings	104320	119.0978	80.0000	99.4046	18.0000	336.0000
Canada	104320	0.0315	0.0000	0.1747	0.0000	0.0000
Emerging	104320	0.3244	0.0000	0.4681	0.0000	1.0000

Table 2.3: Univariate Test

This table presents univariate tests for the main variable employed in the analysis. The sample includes cross-listing-year data of foreign firms that cross-listed on all U.S. exchanges between January 1, 1998 and December 31, 2012. Financial firms, investment fund, or trusts and firms incorporated in offshore tax havens are excluded. Firms that are cross-listed on the U.S. exchanges between January 1998 and June 2002 are in the PreSOX group, firms that are cross-listed on the U.S. exchanges between July 2002 and May 2007 are in the PostSOX-PreRULE group, and firms that are cross-listed on the U.S. exchanges between June 2007 and December 2012 are in the PostRULE group. The definition of all variables is in Table 2.1

	PreSOX (1)			PostSOX-PreRULE (2)			PostRULE (3)			Difference in means			
	N	Mean	Median	N	Mean	Median	N	Mean	Median	(2) - (1)	Std.Err	(3) - (2)	Std.Err
Total assets (Bil. USD)	194	6.01	0.53	117	4.61	0.25	149	2.91	0.28	-1.40	(-2.56)	1.70	(-2.55)
Sale growth	194	0.23	0.21	117	0.29	0.25	149	0.29	0.29	0.06**	(-0.03)	-0.01	(-0.03)
Book-to-Market ratio	194	0.59	0.45	117	0.44	0.38	149	0.57	0.43	-0.14***	(-0.05)	0.13**	(-0.06)
Big 5 auditor	194	0.85	1.00	117	0.83	1.00	149	0.84	1.00	-0.02	(-0.040)	0.01	(-0.05)
Revised Anti-Director Right index	194	4.02	4.00	117	3.46	4.00	148	2.50	2.00	-0.56***	(-0.13)	-0.96***	(-0.18)
Efficiency of the judicial system	193	9.24	9.25	117	8.46	9.25	148	7.79	6.75	-0.78***	(-0.16)	-0.67***	(-0.18)
Ownership concentration	193	0.40	0.40	96	0.44	0.40	75	0.45	0.40	0.04***	(-0.01)	0.01	(-0.02)
IFRS adoption	194	0.01	0.00	117	0.03	0.00	149	0.23	0.00	0.02	(-0.02)	0.20***	(-0.04)
Diff US-Home stock market return	194	0.00	0.05	117	-0.18	-0.20	149	-0.04	0.12	-0.18***	(-0.02)	0.14***	(-0.03)
Home stock market turnover	194	0.72	0.71	117	0.70	0.60	149	1.31	1.36	-0.03	(-0.05)	0.61***	(-0.07)
Home stock market cap/GDP	194	111.62	97.95	117	112.56	103.24	149	104.71	80.31	0.94	(-8.15)	-7.86	(-9.25)
US domestic listings	194	270.89	336.00	117	130.68	138.00	149	77.09	80.00	-140.21***	(-9.62)	-53.59***	-4.14
Canada	194	0.37	0.00	117	0.37	0.00	149	0.21	0.00	0.00	-0.06	-0.16***	-0.06
Emerging	194	0.06	0.00	117	0.34	0.00	149	0.59	1.00	0.29***	-0.05	0.25***	-0.06

Table 2.3 presents the univariate tests for U.S. cross-listed firms' characteristics at the time of cross-listings. Firms are categorized into groups by mean of the period when they pursue U.S. cross-listings. Firms that are cross-listed on the U.S. exchanges between January 1998 and June 2002, between July 2002 and May 2007, and between June 2007 and December 2012 are classified as PreSOX, PostSOX-PreRULE, and PostRULE group, respectively.

Evidence from Table 2.3 is quite intriguing and is consistent with my prediction that the gateway to slip away the U.S. legal enforcement made available by the Exchange Act Rule 12h-6 could disparage an emphasis of legal bonding as the U.S. cross-listing motive of a foreign firm. The evidence at the firm level shows that firms cross-listed in the U.S. have a relatively similar size throughout the study periods, even after the enactment of Rule 12h-6. This finding could arrive from the fact that the details in the SOX Act remain fully effective and untouched by the new Exchange Act of 2007. The ability to absorb cross-listing costs and high regulatory costs imposed by SOX should hence remain relevant to a firm's listing decision post-Rule 12h-6. The variation in the growth opportunity, which also reflects a firm's financing need, across the regulatory periods is worth looking at since these attributes are fundamental to the cross-listing motive under the legal bonding prediction. The higher sale growth and the better valuation found among the PostSOX-PreRULE firm group, relative to the PreSOX group, indicates that firms accessing the U.S. market during the PostSOX-PreRULE period equip with the essential qualities that would invigorate the benefits of legal bonding. I, however, do not observe these characteristics in the firms pursuing the U.S. cross-listing after the Rule 12h-6 adoption. In fact, the result shows a decline in growth opportunities among this group of firms, relative to the PostSOX-PreRULE group. This evidence is consistent with my view that the availability of the pathway to exit

the U.S legal enforcement created by the adoption of Rule 12h-6 could deviate a firm's decision to cross-list in the U.S. from the legal bonding purpose to others.

From the corporate governance perspective, the result shows a declining trend in the quality of corporate governance of U.S. cross-listed firms throughout the periods. As posited by the bonding hypothesis that a firm's costs of capital depend critically on its corporate governance quality, the benefits from the U.S. legal bonding would be more pronounced when a firm's home legal institution is weaker than the U.S.'s. Similarly, foreign firms would experience even higher reward when bonding with the more stringent legal environment. Taking this into account, the drop in corporate governance quality found among firms assessing the U.S. market during the PostSOX-PreRULE period is not entirely worrisome. First, as earlier discussed, this group of firms is characterized by firm attributes that would enable them to make the most of the U.S. legal bonding. Also, the combination of stringent listing standards imposed by SOX and impracticability of escaping U.S. Exchange Act reporting obligations would compel these firms to adhere strictly to the U.S. legal regime. Taken together, the influx of firms from poor governance countries in the U.S. during the PostSOX-PreRULE period might merely illustrate the effect of the SOX Act in intensifying the merit of legal bonding. In contrast to the PostSOX-PreRULE period, the evidence showing the further decline in corporate governance quality, together with the diminishing growth opportunities evidence earlier discussed, observed among firms entering the market after the Rule 12h-6 enactment could alarm the U.S. authorities. The unintentional loophole induced by the new Exchange Act that can complicate a moral hazard in a cross-listing which would ultimately endanger the U.S. market quality.

At the country level, the result showing that the U.S. market attracts more firms from mandatory IFRS adoption countries in the PostRULE period is not surprising. In 2007, the SEC relaxed its reporting requirements for a U.S. cross-listed firm by accepting the financial

statements prepared using IFRS without reconciliation of earnings and stockholders' equity to U.S. GAAP. This relaxation could explain why we observe the more massive flow of cross-listing by firms from mandatory IFRS adoption countries in the PostRULE period. For the market level, consistent with the higher listing flow of firms from emerging countries observed in the post-Rule period, the substantial increase in home stock market turnover post-Rule could simply indicate significant growth in emerging market in the recent period.

2.3.4. Research Method

To examine the economic consequence of the Exchange Act Rule 12h-6 on the U.S. market attractiveness, I borrow the logical argument from Zingales (2007). The author states that a firm's cross-listing decision is most sensitive to the costs and benefits offered by each listing location. With a wide range of alternative markets to choose from, the flow of international listings is, therefore, a useful indicator of a market's legal standing just like "the canary in the mine shaft" (an analogy used by Zingales (2007, p.2)). Because foreign firms would remain untouched by legislation in the U.S. as long as they remain local, the change in the decision of foreign firms from staying domestic to become a U.S. cross-listed firm would be a legitimate indicator for the change in the value perceived by those firms as a result of the new regulation.[5] For this reason, I examine the role of the new deregistration rule in influencing a firm's cross-list decision on in the U.S. market in two separate models.

2.3.4.1. Listing decision model

The listing decision model studies the association between the rule and the changes in the likelihood of a foreign firm choosing to cross-list on a U.S. exchange against choosing to

[5] Notably, this research paper limits its study scope only to examining if the new Exchange Act Rule 12h-6 could enable the U.S. exchanges to attract more listings from international firms as intended by the SEC and leave the investigation on the change in perceived value of the U.S. market as a consequence of the new rule on the future research.

remain local. I employ the pooled probit regressions in which the dependent variable is an indicator that indicates a U.S. cross-listing status of a foreign firm. A US listing indicator equals to one in all firm-year observations that the foreign firm decides to cross-list on a U.S. exchange and stays cross-listing and equals to zero in all firm-year observations before the U.S.-cross-listing event or at/after the U.S. delisting event, if any. To assess the effect of Rule 12h-6, I include an indicator *PostRULE* that indicates the Rule 12h-6 enactment event on June 4th, 2007. The *PostRULE* indicator equals one in the year 2007 and all years after and zero otherwise. Although the focal point of this study is to analyze the economic impact of the Exchange Act Rule 12h-6, the fact that the details in the SOX Act remain fully active and untouched by the new Exchange Act makes it necessary to consider the SOX's effect when estimating the effect of the new rule. Leaving the SOX variable out of the analysis would result in an omitted-variable bias and a biased estimate. For this reason, I also include an indicator *PostSOX* that indicates the Sarbanes-Oxley Act legislation event on July 30th, 2002. The *PostSOX* indicator equals one in the year 2002 and all years after, and zero otherwise. I also control for other determinants of the cross-listing decision by including all covariates such as firm-, governance-, exchange-, industry-, and country-level explanatory variables as advised by literature. The interaction between the regulatory event indicator and the corporate governance measure is included in the extension model to explain the hypothesis that the impact of Rule 12h-6 on listing decisions of foreign firms is more pronounced among firms from weak governance countries. In sum, I estimate variations of the following pooled probit regression model:

$$\begin{aligned}\text{Prob}(Y_{it} = 1) = {} & \beta_0 + \beta_1 \text{PostRULE} + \beta_2 \text{PostSOX} \\ & + \beta_3 Canada + \beta_4 Emerging \\ & + \beta_5 \text{IFRS adoption} \\ & + \beta_6 \text{Diff US} - \text{Home stock market return} \\ & + \beta_7 \ln(1 + \text{Home stock market turnover}) \\ & + \beta_8 \ln(1 + \text{Home market cap/GDP}) \\ & + \beta_9 \text{US domestic listings} \\ & + \beta_{10} \text{Big5 auditor} + \beta_{11} \ln(\text{TotalAssets}) \\ & + \beta_{12} \ln(1 + \text{Sale growth}) + \beta_{13} \ln(1 + \text{BTM}) \\ & + \beta_{14} \text{Governance} + \text{Industry Dummies} + \varepsilon it\end{aligned} \tag{2.1}$$

where

$$Y_{it} = \begin{cases} 0 \text{ for staying domestic with probabliity of } \pi_{0it} \\ 1 \text{ for cross} - \text{listing on a US exchange with probability of } \pi_{1it} \end{cases}$$

2.3.4.2. Exchange choice model

The exchange choice model examines the effect of Rule 12h-6 on foreign firms' listing preferences on the U.S. against the U.K. market using the cross-listing year data. The result from the exchange choice model would give us an insight on the impact of Rule 12h-6 on the change in the U.S. market's relative attractiveness. I follow the research method employed by Piotroski and Srinivasan (2008) and use the following cross-section probit regressions.

$$\begin{aligned}\text{Prob}(Y_i = 1) = {} & \beta_0 + \beta_1 \text{PostRULE} + \beta_2 \text{PostSOX} \\ & + \beta_3 \text{Canada} + \beta_4 \text{Ireland} + \beta_5 \text{UK colony} \\ & + \beta_6 \text{IFRSadoption} \\ & + \beta_7 \text{Diff US} - \text{UK stock market return} \\ & + \beta_8 \text{Diff US} - \text{UK trade in home country} \\ & + \beta_9 \text{Diff US} - \text{UK market liquidity} \\ & + \beta_{10} \ln(1 + \text{Home stock market turnover}) \\ & + \beta_{11} \ln(1 + \text{Home market cap/GDP}) \\ & + \beta_{12} \text{Big5 auditor} + \beta_{13} \ln(\text{Total Assets}) \\ & + \beta_{14} \text{Governance} + \text{Industry Dummies} + \varepsilon it\end{aligned} \tag{2.2}$$

where

$$Y_i = \begin{cases} 0 \text{ for crosslisting on a UK exchange with probability of } \pi_{0i} \\ 1 \text{ for crosslisting on a US exchange with probability of } \pi_{1i} \end{cases}$$

The dependent variable of the exchange choice model indicates an exchange on which a foreign firm chooses to cross-list its shares. A *US listing* indicator equals one if a firm cross-lists on a U.S. exchange and zero if a firm cross-lists on the U.K. Main Market. To assess the effect of Rule 12h-6, I include the *PostRULE* indicator that equals one for a listing occurring after 2007 and zero otherwise. Like the listing decision model, I incorporate the *PostSOX* indicator to control for the potential effect of SOX on the exchange choice decision. The *PostSOX* indicator equals one for a listing occurring after 2002 and zero otherwise. I also take into account for other determinants of the listing exchange choice as advised by the literature.

Speaking to the main idea behind this research design, Piotroski and Srinivasan (2008) explain that "our research design thus focuses on a firm's exchange choice *given* the firm's decision to list its shares on a high-quality exchange. This research design recognizes that

managers of foreign firms (defined as non-U.S. non-U.K. firms) choose from a set of competing exchanges while selecting a specific foreign listing venue (or set of venues)" (p. 386). The benefit of this research design is that it eliminates the potential influence of other factors relevant to the pre-cross-listing decision by simply focusing on the cross-section variation in the exchange choice decision in response to Rule 12h-6. Additionally, by utilizing their leading roles in the global capital markets of the U.S. and the U.K., this research design also help control for any global trends or any contemporaneous changes in cross-listing activities that are irrelevant to the Exchange Act Rule 12h-6 but may equivalently affect the U.S./U.K. listings (Duarte et al., 2014).

2.4. Empirical results

2.4.1. Evidence on the economic impact of Rule 12h-6 on foreign listing decisions in U.S

Table 2.4 illustrates the regression results of the U.S. listing indicator on the Exchange Act Rule 12h-6. The table presents the results of the listing decision model using the pooled probit regression analyses with industry and country dummies. Since I already account for the possible variation in a listing decision of a foreign firm as a result of time change by incorporating the regulatory dummy variables in the model, the year dummies are therefore not included. It is also worth noting that the baseline model of this study omits the country dummies. Because the corporate governance measures used in the analysis are time-invariant and only vary in countries, the inclusion of both country dummies and corporate governance measures would lead to the perfect multicollinearity issue, and thus should be avoided.

Table 2.4: Pooled Probit Regressions – The Impact of the Exchange Act Rule 12h-6 on the Probability of a U.S. Cross-Listing versus Non-Cross-Listing

This table presents results of pooled probit regressions. The sample includes foreign firms that cross-listed on U.S. exchanges and foreign firms from the same domicile countries that do not cross-list aboard between 1998 and 2012. Financial firms, investment fund, or trusts and firms incorporated in offshore tax havens are excluded. The dependent variable is the U.S. listing indicator that equals one in all years that a foreign firm cross-lists or stays cross-listing its shares of equity on U.S. exchange and zero otherwise. PostRULE is a binary variable that equals one for all years at and after 2007 (the Rule 12h-6 enactment) and zero otherwise. PostSOX is a binary variable that equals one for all years at and after 2002 (the Sarbanes-Oxley Act enactment) and zero otherwise. The definitions of all variables are in Table 2.1. Pseudo $R2$ is a goodness-of-fit measure based on the difference between unrestricted and restricted likelihood functions. The standard errors (in parentheses) are robust to heteroscedasticity and cross-sectional correlation in a given year. *, **, *** indicate statistical significance at 10%, 5%, and 1% levels, respectively

Variable	Baseline	Control for country effects
PostRULE	0.2940***	0.1472**
	(0.0740)	(0.0729)
PostSOX	0.2490	0.2721
	(0.1711)	(0.1666)
Canada	1.2750***	
	(0.1422)	
Emerging	0.2334***	
	(0.0551)	
IFRS adoption	-0.8026***	-0.7951***
	(0.0582)	(0.0768)
Diff US-Home stock market return	0.1580	0.1636
	(0.1432)	(0.1074)
ln(1+Home stock market turnover)	-0.3590**	0.2679
	(0.1540)	(0.1667)
ln(1+Home market cap/GDP)	0.0284	0.1505**
	(0.0304)	(0.0659)
US domestic listings	-0.0008	-0.0008
	(0.0005)	(0.0005)
Big 5 auditor	1.1411***	1.3245***
	(0.1165)	(0.1417)
ln(Total assets)	0.2341***	0.2788***
	(0.0128)	(0.0152)
ln(1+Sale growth)	0.4853***	0.3844***
	(0.1342)	(0.1195)
ln(1+BTM)	-0.1825	-0.0663
	(0.1213)	(0.1389)
Constant	-3.8364***	-5.6570***
	(0.3114)	(0.4935)
Observations	103935	103047
Pseudo R^2	0.3496	0.4629
Industry effects?	Yes	Yes
Country effects?	No	Yes

The estimations produce several key findings. First, the coefficient of the *Canada* indicator being positive and statistically significant explains significant variation in listing decisions of Canadian firms in the U.S. that may arrive from the countries' tightness in geographic, economic, and political aspects. Second, firms from emerging economies are more likely to pursue a U.S. cross-listing. Consistent with the bonding hypothesis, the significant growth opportunities in these countries would emphasize the need for businesses' financing. The countries' insufficient strength in legal institutions and protection would, however, make the outside capital rather limited or otherwise very expensive. These conditions hence encourage firms from emerging countries to seek access to the capital available, yet cheaper, in the U.S. market. Third, the results show that firms from mandatory IFRS adoption are, on average, less likely to cross-list in the U.S. The troublesomeness of reconciling the earnings and stockholders' equity to the U.S. GAAP standard may hamper the decisions to cross-list in the U.S. of foreign firms preparing their financial statements using the IFRS standard. Fourth, the U.S. market also attracts firms seeking to tap into a large pool of liquidity. The evidence shows that firms from the narrow and illiquid markets are more likely to cross-list in the U.S. Fifth, firms with relatively higher corporate governance quality, as indicated the Big 5 auditor variable, are also more likely to choose U.S. listings. Relative to the other firms not using the Big 5 auditor, the lower expected costs of listing in the U.S. faced by the Big 5 auditor-employed firms should make the U.S. listing more attractive. Finally, the results show that foreign firms are more likely to pursue a U.S. cross-listing if they are larger in size and higher in growth opportunities.

After adjusting for the potential effects of these listing-decision determinants, the evidence shows that the average probability of a foreign firm deciding to list its shares on a U.S. exchange is significantly higher after the adoption of Rule 12h-6 across all model

specifications. The smaller *PostRULE* coefficient, almost by half, reporting in the model controlling for the country effects using the country dummies suggests that, to a great extent, variation in a firm's listing decision likely arrives from the country time-invariant factors. In terms of SOX, the results show insignificant, positive impact of SOX on a listing decision of a foreign firm. The lack of statistical significance and the evidence showing the opposite effect of SOX from the prediction could arrive from the differing reactions to the SOX Act among the two group of firms: weaker governance versus stronger governance. As discussed earlier, the massive regulatory costs of U.S. listings imposed by the SOX Act would typically curb a firm's desire to list its shares on a U.S. exchange post-SOX. However, because of the small discrepancy in corporate governance systems, the predicted, adverse effect of SOX should become less pronounced, or even insignificant, among firms with higher quality in corporate governance such as those located in strong legal regime countries. The cancellation in the opposite impacts of SOX on listing decisions between firms from weaker versus stronger governance regime countries could explain the insignificant effect of SOX observed in the listing decision model.

Table 2.5 reports the regression results of the U.S. listing indicator on the Exchange Act Rule 12h-6 indicators after controlling for the variation in listing decisions that may arrive from the quality of corporate governance in the firms' home countries. The corporate governance measures employed in the analysis, including the *Revised Anti-Director Rights Index*, the *Efficiency of the judicial system*, and the *Ownership concentration*, are widely used in the literature. I also construct the principal components of these governance variables and use it as the forth corporate governance variable for a robustness check purpose.

Table 2.5: Pooled Probit Regressions - The Impact of the Exchange Act Rule 12h-6 on the Probability of a U.S. Cross-Listing versus Non-Cross-Listing Adjusting for Firm's Home Country Corporate Governance

This table presents results of pooled probit regressions adjusting the effect of legal institution and corporate governance in home country of a cross-listed firm. The sample includes foreign firms that cross-listed on U.S. exchanges and foreign firms from the same domicile countries that do not cross-list aboard between 1998 and 2012. Financial firms, investment fund, or trusts and firms incorporated in offshore tax havens are excluded. The dependent variable is the U.S. listing indicator that equals one in all years that a foreign firm cross-lists or stays cross-listing its shares of equity on U.S. exchange and zero otherwise. PostRULE is a binary variable that equals one for all years at and after 2007 (the Rule 12h-6 enactment) and zero otherwise. PostSOX is a binary variable that equals one for all years at and after 2002 (the Sarbanes-Oxley Act enactment) and zero otherwise. Pseudo $R2$ is a goodness-of-fit measure based on the difference between unrestricted and restricted likelihood functions. The standard errors (in parentheses) are robust to heteroscedasticity and cross-sectional correlation in a given year. *, **, *** indicate statistical significance at 10%, 5%, and 1% levels, respectively.

Variable	Model 1	Model 2	Model 3	Model 4
PostRULE	0.2985***	0.2888***	0.1503**	0.1822***
	(0.0824)	(0.0820	(0.0640)	(0.0652)
PostSOX	0.1650	0.2157	0.1656	0.1624
	(0.1584)	(0.1649)	(0.1383)	(0.1453)
Revised Anti-Director Right index	-0.1685***			
	(0.0262)			
Efficiency of the judicial system		-0.0823***		
		(0.0164)		
Ownership concentration			2.2288***	
			(0.1448)	
Principal components of governance variables				-0.2016***
				(0.0220)
IFRS adoption	-0.9488***	-0.9168***	-0.9555***	-0.9149***
	(0.0739)	(0.0701)	(0.0737)	(0.0709)
Diff US-Home stock market return	0.1965	0.1655	0.3992**	0.3654**
	(0.1450)	(0.1496)	(0.1828)	(0.1864)
ln(1+Home stock market turnover)	-0.7872***	-0.4757***	-0.5137***	-0.7321***
	(0.1323)	(0.1409)	(0.1277)	(0.1457)
ln(1+Home market cap/GDP)	0.1061**	0.0085	0.1268***	0.1211***
	(0.0434)	(0.0405)	(0.0290)	(0.0337)
US domestic listings	-0.0010	-0.0008	-0.0010	-0.0010
	(0.0009)	(0.0005)	(0.0009)	(0.0008)
Big 5 auditor	1.2456***	1.2515***	0.8641***	0.9686***
	(0.1128)	(0.1146)	(0.0831)	(0.0889)
ln(Total assets)	0.2164***	0.2026***	0.2331***	0.2205***
	(0.0102)	(0.0101)	(0.0092)	(0.0090)
ln(1+Sale growth)	0.5561***	0.5971***	0.4693***	0.4829***
	(0.1441)	(0.1450)	(0.1602)	(0.1612)
ln(1+BTM)	-0.1131	-0.1734	-0.4277***	-0.3935***
	(0.1252)	(0.1156)	(0.0962)	(0.0972)
Constant	-3.3225***	-3.2586***	-4.9560***	-4.0239***
	(0.2414)	(0.2307)	(0.2504)	(0.2292)
Observations	103741	101750	88956	88956
Pseudo R^2	0.3096	0.2974	0.3237	0.3084
Industry effects?	Yes	Yes	Yes	Yes

The overall results are consistent with the results in the baseline model shown in Table 2.4. After adjusting for the potential effect of a home country's corporate governance and other listing-decision determinants, the evidence still shows that the average probability of a foreign firm deciding to list its shares on a U.S. exchange is significantly higher after the adoption of Rule 12h-6. This result is robust to the choice of corporate governance measures used. It is, however, important to note that, among others, the *Ownership concentration* variable appears to capture the greatest degree in the variation of listing decisions of foreign firms associated with their home countries. To be specific, the magnitude of the *PostRULE* coefficient in the model using the *Ownership concentration* variable is almost half of the size of the *PostRULE* coefficients in the other models, particularly the two models with *Revised Anti-Director Right index* and *Efficiency of the judicial system* variables. This magnitude of the *PostRULE* coefficient is also very similar to the *PostRULE* coefficient shown in the model in Table 2.4 that controls for the country's effects. According to the prior research finding that most foreign firms have controlling shareholders (La Porta, López de Silanes, and Shleifer, 1999), this result implies that a U.S. listing decision would be made based on the benefits and costs of cross-listing perceived by insiders of a foreign company. In a country where the concentration in corporate ownership is so severe, firms may find themselves well-off under their current governance regimes and therefore have less desire to expose themselves to better governance systems.

2.4.2. Evidence on the economic impact of Rule 12h-6 on listing decisions in the U.S. of firms with different governance characteristics

The proceeding analysis suggests more pronounced results. The average likelihood of a foreign firm deciding to list its shares on a U.S. exchange is significantly higher after the adoption of Rule 12h-6, particularly among firms from weaker corporate governance countries. Again, this result is consistent with the choice of corporate governance measure

used, and, among others, the *Ownership concentration* variable produces the most interesting observation. Not only that the result shows the higher likelihood of listing decisions in the U.S. post-Rule 12h-6 of the weaker governance firms, the model with *Ownership concentration* variable also reports a significant finding related to the SOX effect. Consistent with the general conjuncture on the impact of SOX on the U.S. listing activity posited by Piotroski and Srinivasan (2008) and Duarte et al. (2014), the result in the model using *Ownership concentration* variable shows that firms with weaker governance quality are less likely to list their shares on U.S. exchanges after SOX. Specifically, this finding implies that firms with greater likelihood of expropriation by insiders, such as those severely held, could be scared off by the stringent reporting requirements and the harsh penalties and imprisonment for a false report or noncompliance imposed by the SOX Act.

Table 2.6: Pooled Probit Regressions - The Impact of the Exchange Act Rule 12h-6 and Country Corporate Governance on the Probability of a U.S. Cross-Listing versus Non-Cross-Listing

This table presents results of pooled probit regressions incorporating the interaction effect between legal institution and corporate governance of a firm's home country and regulatory event dummies. The sample includes foreign firms that cross-listed on U.S. exchanges and foreign firms from the same domicile countries that do not cross-list aboard between 1998 and 2012. Financial firms, investment fund, or trusts and firms incorporated in offshore tax havens are excluded. The dependent variable is the U.S. listing indicator that equals one in all years that a foreign firm cross-lists or stays cross-listing its shares of equity on U.S. exchange and zero otherwise. Pseudo R_2 is a goodness-of-fit measure based on the difference between unrestricted and restricted likelihood functions. The standard errors (in parentheses) are robust to heteroscedasticity and cross-sectional correlation in a given year. *, **, *** indicate statistical significance at 10%, 5%, and 1% levels, respectively.

Variable	Model 1	Model 2	Model 3	Model 4
PostRULE	0.6293***	0.4747**	-0.0450	0.1924***
	(0.1883)	(0.1989)	(0.0970)	(0.0648)
PostSOX	0.0114	0.2778	0.3144*	0.1613
	(0.2370)	(0.2791)	(0.1736)	(0.1452)
Revised Anti-Director Right (ADR) index	-0.1467***			
	(0.0290)			
Revised ADR index × PostRULE -	0.0887***			
	(0.0335)			
Revised ADR index × PostSOX	0.0400			
	(0.0393)			
Efficiency of the judicial system -		0.0840***		
		(0.0182)		
Efficiency of the judicial system × PostRULE		-0.0214*		
		(0.0114)		
Efficiency of the judicial system × PostSOX		-0.0062		
		(0.0241)		
Ownership concentration			2.3426***	
			(0.1285)	
Ownership concentration × PostRULE			0.4810**	
			(0.2305)	
Ownership concentration × PostSOX			-0.3728**	
			(0.1802)	
Principal components of governance variables				0.2449***
				(0.0264)
Principal components × PostRULE				-0.0263**
				(0.0126)

Table 2.6 (continued)

Variable	Model 1	Model 2	Model 3	Model 4
Principal components × PostSOX				0.0408 (0.0318)
IFRS adoption	-0.9347*** (0.0761)	-0.9171*** (0.0703)	-0.9646*** (0.0764)	-0.9077*** (0.0709)
Diff US-Home stock market return	0.1646 (0.1472)	0.1601 (0.1521)	0.3968** (0.1857)	0.3614* (0.1859)
ln(1+Home stock market turnover)	-0.8096*** (0.1372)	-0.4802*** (0.1420)	-0.5029*** (0.1227)	-0.7477*** (0.1432)
ln(1+Home market cap/GDP)	0.0924* (0.0480)	0.0031 (0.0423)	0.1275*** (0.0291)	0.1219*** (0.0335)
US domestic listings	-0.0010 (0.0009)	-0.0007 (0.0005)	-0.0010 (0.0008)	-0.0011 (0.0008)
Big 5 auditor	1.2452*** (0.1125)	1.2535*** (0.1141)	0.8614*** (0.0822)	0.9692*** (0.0894)
ln(Total assets)	0.2165*** (0.0101)	0.2033*** (0.0101)	0.2334*** (0.0093)	0.2202*** (0.0089)
ln(1+Sale growth)	0.5623*** (0.1452)	0.5963*** (0.1449)	0.4685*** (0.1611))	0.4843*** (0.1608
ln(1+BTM)	-0.1031 (0.1228)	-0.1710 (0.1158)	-0.4273*** (0.0956)	-0.3951*** (0.0974)
Constant	-3.3535*** (0.2789)	-3.4099*** (0.2944)	-5.0117*** (0.2474)	-4.0201*** (0.2290)
Observations	103741	101750	88956	88956
Pseudo R^2	0.3106	0.2975	0.3240	0.3086
Industry effects?	Yes	Yes	Yes	Yes

2.4.3. Evidence on the economic impact of Rule 12h-6 on a change in U.S. versus U.K. listing preferences

Table 2.7 presents descriptive evidence on the trends in foreign listing activities on the U.S. exchanges and the U.K. Main Market over the period January 1998 to December 2012 and for the three subperiods, including PreSOX, PostSOX-PreRULE, and PostRULE periods. The transition periods of the two regulations are also separated out. Each column presents the listing activity by the host market and the underlying exchange.

A couple of findings in Table 2.7 are worth looking at. First, the result shows that, regardless of the time, the U.S. markets, mainly the New York Stock Exchange and Nasdaq, still hold their leading roles as the global marketplaces for firms seeking international listings. A significant number of cross-listing activities occur in these two markets, while only a small fragment of international listings occurs on the U.K. exchange. The evidence also shows that both the U.S. and U.K. exchanges experience similar listing trends with a drop in listing activities during the SOX period and recovering afterward. Second, the evidence from the "Percent U.S." column, which presents the ratio of total new U.S.- exchange foreign listings to total new foreign listings on the U.S. exchanges and the U.K. Main Market in a given year, indicates a decline in the listing activities in the U.S. in the PostSOX-PreRULE period. This evidence is consistent with conventional wisdom in the financial press that the excessive reporting requirements and the high regulatory costs imposed by SOX have rendered the U.S. market uncompetitive. The evidence also shows an increase in the Percent U.S. data observed in the PostRULE period. In line with the prediction that the higher leniency in deregistration rule brought by the Exchange Act Rule 12h-6 should remove the burdens and uncertainties associated with the exit process serving as a disincentive to a U.S. cross-listing decision, this result implies that the new deregistration rule should encourage more listing activities in the U.S. market.

Table 2.7: New U.S. and U.K. Foreign Listings by Exchange and Year

This table presents the frequency of new foreign listing activity on U.S. exchanges and on U.K. Main Market over the period January 1, 1998 to December 31, 2012 in the final data set. The table also provides listing frequency data for the subperiods, including PreSOX (pre-May 2002), during SOX transition (May 2002 through July 2002), PostSOX-PreRULE (post-July 2002 through pre-December 2006), during Rule 12h-6 transition (December 2006 through June 2007), and PostRULE (post-June 2007). The column Percent U.S." presents the ratio of total new U.S.-exchange foreign listings to total new foreign listings in U.S. exchanges and U.K. Main Market in a given year.

	U.S. exchanges			U.K. Main Market			Total		
Year	NYSE	Nasdaq	AMEX	Ordinary shares	Depositary receipts	US	UK	Total	Percent U.S.
1998	33	31	5	2	11	69	13	82	0.8415
1999	13	42	4	6	6	59	12	71	0.8310
2000	39	69	1	8	5	109	13	122	0.8934
2001	31	18	2	1	3	51	4	55	0.9273
2002	17	8	4	2	1	29	3	32	0.9063
2003	13	4	8	1	1	25	2	27	0.9259
2004	13	19	15	4	6	47	12	59	0.7955
2005	14	29	14	1	9	57	10	67	0.8507
2006	23	17	8	2	14	48	16	64	0.7500
2007	34	26	11	10	13	71	23	94	0.7553
2008	10	9	9	2	6	28	8	36	0.7778
2009	13	14	2	2	6	29	8	37	0.7838
2010	31	27	4	3	8	62	11	73	0.8493
2011	17	17	9	3	5	43	8	51	0.8431
2012	14	10	6	9	3	30	3	33	0.9091
PreSOX	122	161	12	17	25	295	42	337	0.8754
SOX-transition	6	0	2	1	0	8	1	9	0.8889
PostSOX-PreRULE	68	76	47	9	33	191	42	233	0.8197
RULE-transition	9	13	3	5	5	25	10	35	0.7143
PostRULE	110	90	38	15	36	238	51	289	0.8235
Total	315	340	102	47	99	757	146	903	0.8383

Table 2.8: Cross-sectional Probit Regressions – The Impact of the Exchange Act Rule 12h-6 on the Probability of U.S. versus U.K. Foreign Listings

This table presents results of cross-sectional probit regressions showing the impact of Exchange Act Rule 12h-6 on the probability of a U.S. versus U.K. foreign listings. The sample includes foreign firms that cross-listed on U.S. or U.K. exchanges between 1998 and 2012. Financial firms, investment fund, or trusts and firms incorporated in offshore tax havens are excluded. The dependent variable is the U.S. listing indicator that equal one for a foreign firm that cross-listed on a U.S. exchange and zero for a foreign firm that cross-listed on a U.K. exchange. PostRULE is a binary variable that equals one if a firm's cross-listing event occurs at or after June 4, 2007 (the Rule 12h-6 enactment) and zero otherwise. PostSOX is a binary variable that equals one if a firm's cross-listing event occurs at or after July 30, 2002 (the enactment of Sarbane-Oxley Act) and zero otherwise. Because the Diff US-UK market liquidity data is only available after 2002, PostSOX dummy in Model (2) is omitted. Pseudo R_2 is a goodness-of-fit measure based on the difference between unrestricted and restricted likelihood functions. The standard errors (in parentheses) are robust to heteroscedasticity. *, **, *** indicate statistical significance at 10%, 5%, and 1% levels, respectively.

Variable	Model 1	Model 2	Model 3
PostRule	0.6268* (0.3647)	0.5920* (0.3584)	0.4375* (0.2571)
PostSOX	-0.0597 (0.3073)		-0.3748 (0.3095)
Canada	0.0606 (0.6960)	0.1013 (0.8776)	
Ireland	-0.9429* (0.5455)	-1.1464* (0.6239)	
UK colony	-1.2639*** (0.3615)	-1.2654*** (0.4368)	-0.9267*** (0.3478)
IFRS adoption	-1.6368*** (0.3621)	-1.6025*** (0.3456)	-1.4460*** (0.3955)
Diff US-UK stock market return	4.0368*** (0.7877)	5.6817*** (2.1357)	4.2044*** (0.8507)
Diff US-UK trade in home country	0.6107 (1.3186)	1.3220 (1.9084)	1.0939 (0.9223)
Diff US-UK market liquidity		1.9617 (1.4173)	
Principal components of governance variables			-0.5230*** (0.1868)
ln(1+Home stock market turnover)	0.0104 (0.5902)	0.0919 (0.7676)	0.3609 (0.5565)
ln(1+Home stock market cap/GDP)	0.1539 (0.2032)	0.0201 (0.2794)	0.2292 (0.2344)
Big 5 auditor	1.4537*** (0.2661)	1.4686*** (0.3432)	1.5504*** (0.2859)
ln(Total assets)	-0.2544*** (0.0562)	-0.1838** (0.0899)	-0.2633*** (0.0619)
Intercept	1.5922 (1.3181)	1.4012 (1.8723)	0.7152 (1.3057)
Observations	496	308	392
Pseudo R^2	0.4613	0.5122	0.4514
Industry effect?	Yes	Yes	Yes

Table 2.8 reports estimations for a cross-section exchange choice model which incorporates firm-, exchange-, governance-, and country-specific factors to describe the variation in listing preferences of foreign firms choosing between the U.S. exchanges and the London Stock Exchange's Main Market. These estimations offer several key findings. First, the results show that the geographic indicator variable being statistically significant suggests that foreign firms are likely attracted to a particular exchange on account of geographic and historical connectedness. To be specific, Irish firms and firms located in countries once belonging to the U.K. are more likely to cross-list in the U.K., while Canadian firms are likely attracted to the U.S. market. Second, similar to the finding observed in the listing decision model, the results show that firms from mandatory IFRS adoption are, on average, less likely to cross-list in the U.S. The fact that the LSE's Main Market exempts foreign firms accessing the market via depositary receipts from the requirements to file financial reports prepared in the same manner with U.K. or U.S. GAAP or International Accounting Standards (IAS) could make London a lucrative listing location among firms avoiding the U.S. GAAP reconciliation. Third, the evidence shows that foreign firms are more likely to cross-list in the U.S. because of the larger pool of liquidity observed in the U.S. market. Fourth, the result reports that foreign firms from weaker governance countries are more likely to cross-list in the U.S. than in the U.K. The finding documented by MacNeil and Lau (2001) is relevant to this evidence. The authors point out that, due to numerous exceptions from the listing rules made for foreign firms, foreign firms that seek cross-listing for purposes other than governance bonding benefits are likely attracted to the London Stock Exchange. If this is the case, the evidence of firms from weaker legal regime countries that are likely to cross-list in the U.S. would be consistent with the bonding hypothesis. Fifth, in line with the prior finding, the result shows that firms employing Big 5 auditors are also more likely to cross-list in the U.S. than in the

U.K. Finally, I find that on average firms cross-listed on the U.S. exchanges tend to be smaller than the firms cross-listed on the LSE's Main Market. This puzzling finding may arrive from the reason that the U.S. cross-listed firms in this study include all firms that cross-listed on the NYSE, Nasdaq, and Amex. Due to the fact that listing standards of Nasdaq and Amex are much inferior to the listing standard required by the NYSE and the LSE's Main Market, the inclusion of Nasdaq- and Amex-listed companies in the sample could hence compromise the result.

After adjusting for the potential effects of these exchange-choice determinants, the evidence shows that the average probability of a foreign firm choosing to cross-list in the U.S. over the U.K. is significantly higher after the adoption of Rule 12h-6 across all model specifications. This evidence provides further support to the hypothesis that the removal of all burdens and uncertainties of escaping the reporting obligations and the underlying costs through the adoption of Rule 12h-6 could serve as a critical determinant rendering U.S. market attractiveness.

2.5. Conclusion

This study examines the variation in the attractiveness of the U.S. market as a consequence of the enactment of Exchange Act Rule 12h-6 in 2007 that eases the deregistration requirements and makes it easier for non-US cross-listed firms to escape the U.S. market. Employing panel data of U.S.-exchange cross-listed and non-cross-listed firms from 1998-2012, I develop a listing decision model which incorporates firm-, exchange-, governance-industry-, and country-specific factors to describe the variation in U.S. cross-listing decisions of foreign companies in response to Rule 12h-6.

Consistent with the SEC's belief, the results show that preference for international listings on U.S. exchanges has improved after the adoption of Exchange Act Rule 12h-6. Foreign firms are on average more likely to pursue a U.S. cross-listing than stay non-cross

listed in the post-Rule 12h-6 regime. This increased attractiveness of the U.S market, however, appears to be more pronounced particularly among firms for which Rule 12h-6 is more likely to create a moral hazard. The evidence from the exchange choice model examining the variation in the *relative* attractiveness of the U.S. exchanges as a result of Rule 12h-6 is also consistent with the main hypothesis. Using cross-sectional data on the U.S. and the U.K. cross-listing activities, the results show that foreign firms, on average, are more likely to list in the U.S., relative to the U.K., after the adoption of Rule 12h-6, ceteris paribus. Taken together, I conclude that although the rule might help restore the U.S.'s market attractiveness, the diminishing commitment to U.S. disclosure regulations and legal provisions of foreign issuers as a result of the new rule could undermine the virtues of the U.S. market. The influx of firms for which Rule 12h-6 is more likely to increase agency conflicts could be a sign of deterioration in the U.S. market quality and should raise urgent attention from the U.S. authorities.

CHAPTER III

ESSAY II. U.S. STPCK MARKET DEREGULATION THROUGH THE EXCHANGE ACT RULE 12h-6 AND THE VALUATION OF U.S. CROSS-LISTED FIRMS

3.1 Introduction

The fast pace of globalization and aggressive competition among the international markets for new listings put heavy-weight pressure on all major stock exchanges around the world, including the U.S., to come out with the new, compelling strategies that could make these markets survive from such an intense competition. Among the two well-known regulatory strategies, "race toward the top" vs. "race to the bottom", the former approach seems to be the conventional framework of the U.S. capital market for quite some time. This claim is witnessed not only by numerous stringent rules and regulations – particularly the disclosure and reporting requirements mandated by the Sarbanes-Oxley (SOX) Act of 2002 – but also by the onerous process for the U.S. exchange-listed firms to terminate their listings and thereby to break away from the rigid U.S.'s legal system.

However, with the recent wave of financial regulatory reforms, ones may recognize that the long-established motive of the U.S. authorities appears to lose its strength. The furious competition for the new listings among the major exchanges together with the controversy over the potential shortcomings of the race-toward-the-top approach, especially on the U.S. market's loss of competitiveness, could significantly contribute to the departure of the

U.S.'s race-toward-the-top strategy to the other end. This study thus aims to investigate the impact of the U.S. financial market's race-to-the-bottom regulatory strategy on the investor protection system by utilizing the recent deregulation of the disclosure and reporting requirements for the U.S.-listed foreign firms via the adoption of Exchange Act Rule 12h-6 in 2007. To be specific, this research paper examines whether or not, from the investors' point of view, the 2007 deregulation could compromise the strength in the U.S. investor protection system against the insiders of the foreign corporations and would thereby result in the deterioration of the corporate valuation of these U.S.-listed foreign firms.

In a nutshell, the Exchange Act Rule 12h-6 is considered "the first significant deregulation of the U.S. disclosure requirements since the passage of the 1933/1934 Exchange and Securities Acts" (Fernandes, Lel, and Miller, 2010, p.130). The rule not only substantially eases the deregistration process for the foreign private issuers (FPIs) but also allows these issuers to escape from the U.S. regulatory system and its oversight permanently. Just like a stringent regulation that can be a double-edged sword, the Rule 12h-6's passage that makes it easier for foreign firms to escape the rigid disclosure and reporting requirements of the U.S. market, on the one hand, could reduce the firmness of the foreign insiders' commitment to the U.S. regulatory system, particularly in the long run. If this is the case, the investors will encounter with the higher risk of protection and information loss when the currently-U.S.-listed foreign issuers terminate their registrations upon the adoption of new Exchange Act. This rise in the investment risk of the U.S.-listed foreign stocks would lead to the impairment in valuation premiums, which generally accompanies with the U.S. cross-listing activities.

On the other hand, the leniency introduced to a deregistration process for foreign issuers could help relieve the burden of the regulatory costs, such as those imposed by the SOX Act, by allowing the foreign firms that no longer benefit from having their stocks listed on

the U.S. exchanges to flee the market deliberately. From this view, minority shareholders should benefit from the flexibility of the new rule's passage which promotes the improvement of the overall U.S.-listing costs of a foreign company. If this is the case, we should witness the upward adjustment in the valuation premiums of the U.S.-cross-listed firms following the Rule 12h-6 enactment.

In general, the U.S. cross-listing premiums represent the net benefit that foreign firms would obtain from committing themselves with the stronger investor protection system of the U.S. market through the cross-listing activities. I utilize this concept and analyze the net impact of the Exchange Act Rule 12h-6 by examining the variation in the U.S. cross-listing premiums that may occur as a result of the new rule. Using a sample of U.S.-listed foreign firms and non-cross-listed firms that are domiciled in the same home countries between 1998 and 2012, the results from panel regression, pooled ordinary least square (OLS) regression with industry and country dummies, and a battery of robustness checks, including the endogeneity test using the two-stage least square regression, reveal a significant negative association between the U.S. cross-listing premiums and the enactment of Rule 12h-6. These findings provide strong support for the prediction that the race-to-the-bottom policy adopted by the SEC via the Exchange Act Rule 12h-6 enactment in 2007 likely creates the "stuck in the middle" circumstance that not only causes the fuzziness in the regulatory system but also adversely affects the investor-perceived core value of the U.S. capital market. Evidence of a sharper decline in the U.S. cross-listing premiums observed among firms incorporated in countries with a more severe agency problem, such as a poor legal institution country, also further reinforces the detrimental effect of Rule 12h-6. This finding is, in fact, very critical. It suggests that the U.S. investors could foresee the possibility that the insiders of the foreign firms may take advantage of the new overly-permissive deregistration requirements and enter the U.S. market for some other purposes,

more likely moral hazard involved, than for the legal bonding objective which once was the case.

My study contributes to the empirical research on the costs and benefits of the deregulation of the deregistration rules. Evidence showing a negative impact of Rule 12h-6 on the U.S. cross-listing premiums points out that the costs of the new rule appear to outweight the benefits. By enabling the foreign companies to terminate their Exchange Act registration and reporting obligations and to escape the U.S. investor protection system more freely, the costs of losing protection and access to information incurred to investors would rise substantially. Regulatory loosening through the new deregistration system could hence create an unintentional loophole by endangering the U.S. market's quality as well as its essential, exclusive role in the bonding theory.

My study also makes an important empirical contribution to the literature considering the impact of SOX Act on the U.S. investor protection system. Consistent with several studies (e.g., Chhaochharia and Grinstein, 2007; Doidge, Karolyi, and Stulz, 2009; Hochberg, Sapienza, and Vissing-Jørgensen, 2009; Li, Pincus, and Rego, 2008), I find no evidence of a significant decline in the U.S. cross-listing premiums post SOX. In fact, I observe the opposite result. I show that the stricter disclosure requirements imposed by SOX help strengthen investor confidence, and this hence rewards the U.S.-listed firms with the premium valuation. Not surprisingly, among all, the U.S. cross-listed firms coming from weaker corporate governance countries are those that gain the most from SOX. To sum, these findings infer that the adoption of SOX is not necessarily harmful to the publicly-listed firms as some researchers would argue (see Litvak, 2007a, b, 2008; Zhang, 2007).

The implication of this study is that the competitiveness of the U.S. financial market ties firmly with the U.S. market regulatory policies. It may be true that lenient regulatory

requirements could help promote more listings and thereby enhance investment opportunities for investors. The loosening regulations could, however, undermine the investor protection system and thereby disparage the perceived quality of a market as well as investors' trading confidence. In such cases, not only that the U.S. market run the risks of losing its prestige of being a benchmark market for the world's highest listing standards, but it would also lose its exclusivity from being the only market to offer the valuation premiums to a cross-listed firm (see Doidge et al., 2009).

The remaining of the paper proceeds as follows: Section 3.2 provides a review of related literature and testable hypotheses. Section 3.3 describes the sample and variables. Section 3.4 presents and discusses the empirical findings. Section 3.5 concludes the paper and points to some paths for future research.

3.2. Literature review and hypotheses development

3.2.1. Review of related literature

3.2.1.1. The information environment of equity market and cross-listing

The information environment plays a significant role in equity financing. When the asymmetric information characterizes an equity market, the capital formation process is rather di cult. Without having sufficient, truthful information about a company and its prospect, outside investors are entirely at a disadvantage in assessing a precise value of firm equity. Despite that the outside investors, especially the sophisticated groups, could alleviate this disadvantage by producing the information about firms themselves, the information production process is not cheap and often contain some material errors. As part of the investor protection mechanisms, disclosure promotes a richer information environment necessary for the capital formation and financial market development (La Porta, Lopez de Silanes, and Shleifer, 2006). While this system can occur either externally

(i.e., disclosure mandated by listing exchanges or central authorities) or internally (i.e., voluntary disclosure), the effectiveness of the internal corporate governance such as the voluntary disclosure is, however, quite restricted (Doidge, Karolyi, and Stulz, 2007; Klapper and Love, 2004), in part due to the reliability issue. Stulz (1999) describes this dilemma by explaining that when a country lacks a robust legal system necessary for protecting outside investors, including the detailed disclosure and reporting requirements and vigorous legal enforcement, investors may often be hesitant to believe in the information distributed by firms. Even if managers are willing to share the information truthfully, they could find themselves struggling to credibly communicate the information about their firm and their projects with the outside investors.

Limitation on the public access to the reliable information about the companies, along with the cost inefficiency and ineffectiveness of the information production by the outside investors, could lead to the low trading activities, higher risk premium, and higher cost of equity financing. In line with this prediction, Bhattacharya, Daouk, and Welker (2003) find that an excessively expensive equity capital and low trading activities are a common phenomenon in a market where the lack of transparency is of a central issue. On the contrary, there is evidence showing that firms residing in a country with the more extensive securities regulations and the more robust enforcement mechanisms appear to have not only superior access to equity financing but also a better opportunity to acquire equity financing with a much lower cost (Hail and Leuz, 2006). This circumstance would, in turn, encourage a business expansion (McLean, Zhang, and Zhao, 2012), promote the business's growth opportunities, and, ultimately, enhance its corporate valuation (La Porta, Lopez de Silanes, Shleifer, and Vishny, 2002).

The fact that a capital market with the detailed disclosure requirements and the stricter regulatory standards would, in general, furnish its listed firms with privileged access to

low-priced equity financing would give firms, especially those with high growth opportunities, an incentive to pursue their equity listings on the market under such a regulatory atmosphere. It is, however, worth to mention that a move of a country's law to a wholly new system is inordinately difficult and is a long process which depends not only on a revision of the formal rules themselves but also on the transitions of several elements necessary for the success of implementing the new laws. In a country where the investor protection system and the legal framework are weak, firms would hence often find that they cannot just count on their home country laws to change to reap the benefits of having a robust governance system.

Thanks to the modernization of financial markets, there is a solution for firms to bypass the impediments to stronger laws in their home countries, and such a financial innovation is called cross-listing. By definition, cross-listing - also referred to as "foreign listing", "international listing", "dual-listing", or "cross-border listing" - is an approach to which a firm additionally lists its common shares currently traded on a primary market on the other foreign market(s). Cross-listings provide an approach for firms to opt-in the regulatory regimes of the other countries in addition to their local laws. By committing themselves to a stronger regulatory environment with the extensive disclosure and reporting requirements, the robust enforcement systems, and the severe penalties for non-compliance and falsification, a firm could credibly promote its information sharing and improve its transparency necessary for the price formation process. Also, the insiders of such a company could send a powerful signal to outsiders about their intention to limit the private benefits of control and to commit not to expropriate minority shareholders. In effect, cross-listings would serve as a meaningful device that enables firms to sidestep the regulatory disadvantages in their home countries and seek for the governance benefits secured by other domestic firms in the host country.

3.2.1.2. Bonding theory of cross-listing

The emphasis of the cross-listings as a means for firms to leapfrog their local impediments to stringent laws necessary for the capital formation is in line with the concept of the "bonding theory" of cross-listing proposed by Stulz (1999) and Coffee (1999, 2002). The rationale of the bonding theory is built on the universal complications behind equity financing: agency problem and information asymmetry issue. According to Stulz (1999), when a country's laws and regulations protecting minority investors are weak or inadequate, the certainty of getting back the returns on equity investments is rather questionable. Equity financing transactions in such a legal environment would thus only occur if the investment returns were to be sufficiently large enough to compensate all uncertainties. For this reason, Stulz (1999) argues that a firm's cost of capital and the degree of corporate governance are strongly connected: Firms from countries with weak investor protection system would experience an overly expensive capital than do firms from countries with robust investor protection system. A company, however, could mitigate its home country disadvantages and obtain cheaper equity capital by bonding itself with a stronger regulatory regime of the other countries via a cross-listing activity.

In consonance with Stulz's (1999) argument, Coffee (1999, 2002) explains that cross-listings allow firms to "rent" the securities laws, enforcement systems, and legal framework necessary for strong securities markets that may not exist in firms' own countries. A more stringent regulatory environment of cross-listing countries, such as the U.S., which includes higher disclosure and reporting requirements and higher exposure to regulatory oversight, enforcement, class actions, and scrutiny of reputational intermediaries has made it harder and more costly for insiders to extract private benefits of control from outside investors. Cross-listings, hence, represent an intention of company insiders to circumvent information and agency problems. A reduction of investor-perceived risk as a consequence

of such a corporation action would, therefore, lead to an improvement in the cost of capital (Hail and Leuz, 2006, 2009; Stulz, 1999) and, thereby, an incremental increase in valuation of the cross-listed firm (Doidge, Karolyi, and Stulz, 2004; Doidge et al., 2009; Gozzi, Levine, and Schmukler, 2008; La Porta et al., 2002; Reese and Weisbach, 2002; Sarkissian and Schill, 2009).

Despite such a general prediction of bonding hypothesis, it is important to note that the magnitude of valuation improvement would not necessarily to be the same across all cross-listed firms. The difference in the quality of corporate governance systems between firms' homes and host countries, or more specifically the level of corporate governance improvement, is one of the major factors that would affect such a discrepancy. With all else being equal, foreign firms from countries with weaker legal institutions would obtain larger benefits from cross-listings, such as higher equity valuation surprises, than do firms from stronger governance countries (Doidge et al., 2004). Similarly, cross-listed firms would experience higher valuation premium when they cross-listed in a country with stronger legal institutions than when doing so in a country with softer laws. Consistent with this prediction, Doidge et al. (2009) observe a significant valuation premium only on foreign firms with the U.S.-exchange listings. No such evidence is found among the U.K. cross-listed firms, however. Similarly, Campbell and Tabner (2014) document a positive abnormal return on the announcement day and implementation day for a firm that upgrades its listing from the less regulated AIM to the more regulated London Stock Exchange (LSE)'s Main Market. On the contrary, the result shows the negative abnormal returns on both announcement and implementation days for firms that downgrade their listings by moving from LSE's Main Market to AIM.

3.2.1.3. Regulatory competition among financial markets

Cross-listings were once a global phenomenon. The rapid growth in international cross-listings observed around the world in the 1990s had, however, slowed down significantly at the turn of the new decade. The deceleration of cross-listings has triggered a fierce competition for listings among the major international exchanges. Policies, listing requirements, rules, and laws mandating stock exchanges and public companies listed on such exchanges have become a primary tool used by the authorities to compete with the other exchanges for new listings. Despite that both "race toward the top" and "race to the bottom" strategies have been employed by different major exchanges worldwide, the empirical evidence on the research question of whether the "race toward the top" or the "race to the bottom" strategy would work best for an exchange in attracting more foreign listings is still mixed.

On the one hand, the race-toward-the-top strategies would generally stimulate a favorable adjustment of overall quality of publicly-listed firms in the market and would encourage the new listings from firms striving for legal-bonding benefits. According to the bonding theory, when an exchange adopts the race-toward-the-top policies, the resulting stricter regulatory environment would have made an exchange more attractive to firms seeking cross-list purposely to bypass their local impediments to stronger laws and to opt in a more robust regulatory regime necessary for stronger securities market. An empirical finding supporting this standing includes Fernandes and Giannetti (2014) who find that firms are likely to cross-list in a country with better investor protection than their own. A positive (negative) abnormal return surrounding the events when a firm upgrades (downgrade) its listing from the less (more) regulated market to the more (less) regulated exchange, detected by Campbell and Tabner (2014), along with an evidence of a positive stock price reactions to legislative events surrounding the U.S.'s SOX Act of 2002 reported

by many studies (e.g., Duarte, Kong, Siegel, and Young, 2014; Hochberg et al., 2009; Li et al., 2008), infers the benefits that firms could obtain from listing their equities on the markets mandated by stricter laws. These findings together reinforce the prominence of the race-toward-the-top regulatory strategies.

Much evidence, on the other hand, also suggests the effectiveness of race-to-the-bottom strategies that help facilitate an exchange's competitiveness in the global com-petition for new listings. Apparently, when a primary group of an exchange's clienteles is companies that pursue international listings for purposes other than governance bonding, several exemptions from listing rules and reporting obligations that an exchange may offer to foreign companies could entice more of new listings. In such a circumstance, a competitive advantage of a stock exchange appears to center on the leniency in its legal system and the amount of leeway made exclusively for the foreign firms. The U.K. market is an excellent example of a successful exchange conducting the race-to-the-bottom strategy. Foreign firms seeking secondary listings in London are not only exempted from the provisions of the U.K. Listing Authority (UKLA)'s listing rules (Coffee, 2007), these firms are also immune to the U.K. Corporate Governance Code compliance. Also, the primary requirement for the ordinary issuers: to file financial reports prepared in the same manner with U.K. or U.S. GAAP or International Accounting Standards (IAS) does not apply to foreign firms that cross-list on the Main Market via the Depositary Receipt (DR) programs. As consistently suggested by several empirical findings (e.g., MacNeil and Lau, 2001; Rejchrt and Higgs, 2015), these considerable number of exceptions that the U.K. authorities have provided to the U.K.-listed foreign firms have turned the U.K. markets into a lucrative destination for foreign companies yearning for some extent of liquidity improvement and investor-based expansion, with a limited degree of legal exposure. This evidence is also in line with the findings from Doidge et al. (2009) who document an

upward trend in the quality of corporate governance of foreign firms listed in New York post-SOX and a downward trend in governance quality of foreign firms listed in London during the same period. Together, these findings support that the race-to-the-bottom approach could be a powerful strategy for an exchange in competing for new listings among other exchanges. The consequence of this regulatory strategy in term of a decline in overall quality of new firms entering the markets, however, must also be anticipated as part of the regulatory trade-off.

As empirically suggested, firms' decisions to cross-list can stem from various reasons other than legal bonding. Regulatory arbitrage is hence likely to work both ways, and this should equally encourage the competitive advantage of an exchange adopting either the "race toward the top" or the "race to the bottom" strategy into its regulatory setting.[6] Despite such a rationale, it appears that an exchange could fall into the trap of being "stuck in the middle" between the two regulatory schemes. Perhaps not surprisingly, the decisions of the authorities could be swayed by the public debate, financial press, and academic evidence. Considerable empirical studies (e.g., Duarte et al., 2014; Hostak, Lys, Yang, and Carr, 2013; Litvak, 2007a,b; Marosi and Massoud, 2007; Piotroski and Srinivasan, 2008) and a series of discussion in the financial presses[7] regarding the adverse impact of the SOX

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[6] Supporting this view, in his well-known seminal study, Coffee (2002) points out that overseas listing flows are likely to be disproportionately shared among various regional markets, besides the global-leading exchanges like NYSE and NASDAQ, to the extent that many issuers cannot meet the listing standards of these U.S. exchanges or find costs of a U.S. listing too overwhelming. Exposing themselves at least to institutional investors residing in lower disclosure exchanges, such as regional "supermarkets", (term used in Coffee (2002)) such as the Australian and Singapore exchanges in Asia or the LSE and Euronext in Europe, firms are able to improve their liquidity to some extent while are still able to limit their legal exposure or changes in corporate governance structures to a minimal degree. After all, Coffee's (2002) prediction implies that neither the markets with "race toward the top" scenario nor the ones with "race to the bottom" framework will be the only winner in the international listing competition. In fact, "high" and "low" disclosure exchanges could both persist, each attracting a different core constituency of issuers" (Coffee, 2002, p. 1816).

[7] See, for example, the Interim Report of the Committee on Capital Market Regulation (Novem-ber30, 2006) and several related news reports such as "London Calling." Forbes (May8, 2006); "'Wall-Street: What Went Wrong?" The Economist (November25, 2006); "Is a US Listing Worth the Effort?" Wall Street Journal (November28, 2006); "Is Wall Street Losing its Competitive Edge?" Wall Street Journal (December2, 2006); and "In Call to Deregulate Business, A Global Twist'" Wall Street Journal (January26, 2007) (Doidge et al., 2009, p. 254).

Act are an excellent example of an instance that could persuade the U.S. authorities to believe that the race-toward-the-top strategies should somehow be compromised.

In the business strategy literature, being "stuck in the middle" should always be avoided. It arrives from trying to compromise and would generally create a muddle: a muddle for clients who may confuse about a business's standing and what to expect from such a business, and a muddle for employees who might get lost on the priorities of their work goal. A famous academic on economic and business strategy – Michael Porter of Harvard Business School – also points out that, despite the fact that a business's competitive advantage can be derived equally from one of two strategies: cost leadership or differentiation of products or services, the businesses that are trying to do both would do neither very well. The firms would not only experience with low profitability but would also likely suffer from a blurred corporate culture and a conflicting set of organizational arrangements and motivation system (Porter, 2008).

3.2.1.4. The Exchange Act Rule 12h-6 and the "stuck in the middle" circumstance of the U.S. regulatory framework

The amendment of the Exchange Act Rule 12h-6 is the recent regulatory event representing the compromise in the race-toward-the-top regulatory setting of the U.S. financial market. In fact, it is considered "the first significant deregulation of U.S. disclosure requirements since the passage of the 1933/1934 Exchange and Securities Acts" (Fernandes et al., 2010, p130). Specifically, Rule 12h-6 was enacted in 2007 by the U.S. Securities and Exchange Commission (SEC) in response to complaints and public comments on the unnecessary excessiveness of U.S. capital market regulations on deregistration requirements and reporting obligations of non-U.S. cross-listed firms. Under the concern that the outrageous regulatory setting could scare firms away and could ultimately cause the U.S. capital market to lose its attractive among firms seeking for new

listings, on June 4, 2007, the SEC has unanimously adopted the new rules that nullified the conditions and the procedures priory required when U.S.-listed foreign firms decide to discontinue their equity registrations.

Under the general rules, a foreign private issuer will be subject to SEC registration and ongoing disclosure requirements of the Exchange Act 1934 once pursuing a U.S. cross-listing if it meets any of the following circumstances. (1) Securities exchange listing - Section 12(b): A class of a firm's equity securities is listed on a national securities exchange; (2) Issuer size - Section 12(g): The issuer's class of equity securities are held by more than 300 U.S. record holders and a total of either (a) at least 2,000 record holders worldwide or (b) at least 500 persons who are not accredited investors worldwide. Also, the FPI has the total value of assets as of the end of the fiscal year exceeding $10 million; and (3) Public offering - Section 15(d): An FPI that has issued equity securities to the public in a registered offering even if it has currently not listed on any securities exchange or crossed the size threshold of Section 12(g) also become subject to Section 15(d) of the Exchange Act (Bell, 2016; Eiger, Humphreys, and Tanenbaum, 2016; SEC, 2013).

Before the new rules, to terminate its registration of equity securities and to suspend the reporting system, an issuer must first delist its securities under Section 12(b) registration by filing a Form 25 with the SEC. Once delisting under Section 12(b), an issuer must consider whether it has reporting obligations under Section 12(g) and/or 15(d). If it does, the issuer must terminate its registration under Section 12(g) and suspend its reporting obligations under Section 15(d) by filing a Form 15. The key qualification for an FPI to file the Form 15 with the SEC is that it must meet the size threshold as stated in Section 12(g). The challenge of such size criteria faced by an FPI, especially the 300 U.S.-holder provision, is that the issuer must "look through" the record ownership of brokers, banks, dealers, and all other nominee accounts on a worldwide basis and counts the number of

individual accounts of U.S. customers to determine the number of beneficial owners who are the U.S. residents. In addition to this difficulty, a foreign issuer with Section 15(d) registration, who is generally an issuer that once has conducted an SEC-registered offering, would find that it can simply "suspend", and "never terminate", its ongoing reporting obligations even if it has cut down the number of U.S. record holders to be-low the threshold. Still, during the suspension period, these issuers must continue their annual verification that the number of U.S. record holders remains below 300. As long as the class of securities is outstanding, an issuer's reporting duties would automatically resume if at the end of any fiscal year the number of U.S. residents holding the issuer's securities exceed 300 SEC, 2007).

Undoubtedly, with the increased globalization of U.S. investor trading activity this day, an FPI would find it increasingly more di cult to exit the Exchange Act reporting system under the look-through head-count method, even when there is the insufficient interest of the U.S. investors in its U.S.-registered securities. In response to considerable complaint by the companies on the difficulties and uncertainties of the deregistration process and the concern that these burdens may serve as disincentive to foreign firms accessing the U.S. public capital markets, the SEC communally passed the new Exchange Act Rule 12h-6 permitting a foreign private issuer of equity securities, for the first time, to terminate its Exchange Act registration and reporting obligations. Over and above, the SEC also introduced a more achievable, alternative qualification benchmark "relative average daily trading volume", in addition to the revised head-count measure. In particular, the new rule permits an FPI to terminate its registration of a class of its equity securities and the reporting obligations if (1) its U.S. average daily trading volume (ADTV) for a recent 12-month period is lower than 5% of the ADTV of that class of securities worldwide for the same period, or if its U.S. holders of record is less than 300, where the modified "look

through" counting method is used[8]; (2) it meets the Prior Exchange Act Reporting Condition: the FPI must have been an Exchange Act reporting firm for at least 12 months prior to the deregistration, led and provided all reports required for this duration, and has led at least one annual financial report; (3) it satisfies the Home Country Listing Condition: the issuers must maintain the listing of its subject class of equity securities on one or more exchanges which constitutes its primary trading market during the recent twelve-month period prior to the Form 15F filing; (4) it has contented the One-Year Dormancy Condition: the FPI must not have sold securities in the U.S. in a registered offering within the twelve-month period prior to its termination from the Exchange Act[9]; and (5) the One-Year Ineligibility Period after Delisting or Termination of ADR Facility is met. An FPI must wait at least one year after delisting from any U.S. exchanges or terminating its ADR program before it may deregister a class of equity securities under the trading volume benchmark[10] (SEC, 2007).

3.2.2. Hypothesis development

The emphasis of the new Exchange Act Rule 12h-6, besides being the first significant deregulation of the U.S. disclosure requirements since the passage of the 1933/1934 Exchange and Securities Acts, lies on its consequence that could potentially impair the robustness of the U.S. investor protection system and the information environment of the U.S. capital market for foreign stocks. As explained by the bonding theory, the insiders of

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[8] Instead of using a worldwide search, the new rule allows firms to limit its U.S. holders counting to accounts located only in the U.S. and their jurisdictions.

[9] Exceptions for securities transactions include securities sold in Rule 144A and Regulation S offerings, non-underwritten offerings by selling shareholders, offerings to employees, offerings due to the exercise of outstanding rights, warrants, or convertible securities, or offerings under a dividend or interest reinvestment plan.

[10] The one-year waiting period does not apply if the U.S. ADTV of the relevant class of equity securities at the time the FPI delisted that class of equity securities or ceased its ADR facility did not exceed 5% of the worldwide ADTV for the recent 12 months.

foreign firms would opt-in a more stringent regulatory framework of the U.S. if and only if the benefits gained from U.S. cross-listing (i.e., the access to cheaper financing cost to fund the valuable projects) are worth their private benefit losses. Firms would be willing to bear the vigorous disclosure and reporting requirements and the more significant exposure to regulatory monitoring of the U.S. market as long as their business growth still exists, and the outside financing remains necessary. Whenever the growth opportunities of a company start to vanish, and outside financing is no longer needed, insiders would yearn to exit the U.S. market and escape its legal provisions so as to resume their abilities to extract private benefits. At a glance, the fact that Rule 12h-6 eases the requirements for the cross-listed firms to escape the U.S. regulatory oversight could taint the foreign firms' commitment to the U.S. disclosure regulations and legal provisions. Much worse, upon the Exchange Act termination of cross-listed firms, Rule 12h-6's passage also wipes out the protection and the access to information that the investors of the U.S.-listed foreign firms once had. This leads to the following hypothesis:

H1: The introduction of Rule 12h-6 which signifies the withdrawal of the U.S. investor protection system against the U.S-listed foreign firms would associate with a decline in the U.S. cross-listing premiums.

It is worth to note that the valuation effect of the new Exchange Act Rule 12h-6 would not necessarily to be the same across all the U.S.-listed foreign firms. Slackened commitment to bonding with the U.S legal system of the foreign firms as a result of the new deregistration rule could indicate the diminishing dependability of the U.S. laws and regulations to the U.S. cross-listed-stock investors. Simply put, it is very likely that the investors who trade on the non-U.S. cross-listed stocks in the post-Rule 12h-6 period may not be able to depend solely on the U.S. disclosure and protection system. They must also

count on the firm's home legal institutions. As such, when trading on non-U.S. stocks that were issued by firms from countries where a legal system is inadequate and the likelihood of being unprotected against the expropriation by the insiders is high, investors would likely to place higher risk premiums, require higher returns, and pay lower prices to buy these stocks. Taken together, this leads to the following hypothesis:

H2: Relative to the firms from stronger governance countries, the introduction of Rule 12h-6 would lead to a larger decline in the U.S. cross-listing premiums among firms from weaker governance countries.

3.3. Data and variables

3.3.1. Sample Construction

Because this study intends to examine the economic impact of Exchange Act Rule 12h-6 on the valuation premiums of U.S. cross-listings, and because this new rule would only affect the foreign firms that listed their shares of equities on the U.S. exchanges, I limit my sample firms only to the foreign firms that list their shares on the SEC-regulated exchanges, including the NYSE, Nasdaq, and Amex. The listing venues of the sample firms include ordinary listing, American Depositary Receipt (ADR) Level II and III, and New York Registered Share. Foreign companies accessing the U.S. capital by means of a Rule 144a private placement and other OTC issues via OTC Markets Group are disregarded since the SEC registration requirements, several disclosures and reporting regimes, and regulatory bodies of the Securities Act, including the SOX Act, and the amendment in the SEC deregistration rule through the Exchange Act Rule 12h-6 do not apply to these firms. Due to its tiny number, I do not include foreign firms listed on the OTC Bulletin Board (OTCBB) market. I, however, include the OTCBB-listed foreign firms in the robustness check and the results remain consistent with the main findings.

I construct the list of companies with the U.S. exchange listing between January 1, 1998 and December 31, 2012. This period of study enables me to investigate the pre- and post-effect of the Rule12h-6 amendment on the U.S. cross-listing premiums and to disentangle the effect of the SOX Act, which remains effective after the Rule 12h-6 enactment, from the rule effect. I gather the list of foreign companies cross-listed on the U.S. exchanges from two sources. First, I collect the list of firms issuing ADRs or New York Registered Shares – both active and inactive status – from the websites of four major banks, including Citibank, the Bank of New York Mellon, JP Morgan, and Deutsche Bank. For an ordinary listing, I obtain the list of firms from the exchanges' websites and Center for Research in Security Prices (CRSP). The data set from CRSP helps compliment the sample of foreign listings with both active and inactive foreign companies listed their shares on the U.S. exchanges either by the ordinary or the ADR issues. The CRSP company share code number 12 represents an ordinary listing while share code number 30 and 31 represent an ADR listing.

I manually cross-check and verify domicile countries of foreign firms, U.S. listing date, changes in U.S. listing status, including upgrading, downgrading, and delisting, and delisting date (if any), by consulting with the Form 20-F, 10-K, or 40-F from the SEC filing as well as the companies' websites. For any firm which initially lists on one major exchange and later moves to another, I keep the listing date, exchange, and ADR program of the first admission. I apply several selection criteria to the raw sample to ensure a more uniform set of sample data used in the analysis. First, I exclude a firm which initially accesses the U.S. through either a Rule 144A private placement or an OTC listing (or so-called ADR Level I) and later upgrade itself to ADR Level II or Level III since I am mainly interested in the effect of changes in U.S. regulations in initial profile of entrants at the point of listing, not the profile deviated from the initial-entry after some exposure to the U.S. markets. Second,

to avoid any potential exogenous effect from other international listings, a firm that has foreign listings in other countries either before the U.S. listing or in parallel with the U.S. listing within six months will also be removed. Third, all sample firms must have data available on total assets, total sales, and market capitalization in either their first- or second-year post-listing. Fourth, I drop financial firms, investment funds, REITs, and trusts out from the sample since highly leveraged and heavily regulated financial institutions can behave differently from firms in other industries. Lastly, firms incorporated in o shore tax havens, including Bermuda, the Cayman Islands, Jersey, Marshall Islands, British Virgin Islands, Bahamas, U.S. Virgin Islands, the Netherlands Antilles, the Isle of Man, Guernsey, and the Falkland Islands are also removed.

Following other studies (i.e., Doidge et al., 2004; Gozzi et al., 2008), to measure the U.S. cross-listing premiums, I use the non-cross-listed foreign firms as a control group. The non-cross-listed firms are the foreign firms that are located in the same home countries as the U.S.-listed foreign firms but have never been listed aboard. The similar selection criteria as discussed above also apply to the non-cross-listed firms. Before applying any criteria, the raw sample of firms consists of 913 foreign firms that cross-listed in the U.S. between 1998 -2012 and 21,589 non-cross-listed firms from 51 countries. After applying all the selection criteria, there are 731 U.S.-cross-listed firms and 17,536 non-cross-listed firms from total 37 countries left in the final sample.

3.3.2. Data and Variables

The summary of all variables discussed in this section as well as the sources of data are defined in Table 3.1.

Table 3.1: Variable Definitions

Tobin's q and Sales growth are winsorized at the 1st and 99th percentiles to reduce the potential impact of outliers.

Variable	Definition
Cross-listing firms	A binary variable that equals one on all years that a foreign firm is cross-listed on the U.S. exchange, and zero otherwise. *Sources: The Bank of New York, Citibank, JP Morgan, Deutsche Bank, NYSE, NASDAQ, Center for Research in Security Prices (CRSP), Companies' websites, SEC filings from EDGAR, and Datastream.*
Cross-list event	A binary variable that equals one only at the year that a foreign firm is cross-listed on the U.S. exchange, and zero otherwise. *Sources: The Bank of New York, Citibank, JP Morgan, Deutsche Bank, NYSE, NASDAQ, Center for Research in Security Prices (CRSP), Companies' websites, SEC filings from EDGAR, and Datastream.*
PostRULE	A binary variable that indicates the Rule12h-6 enactment event on June 4th, 2007. PostRULE equals one at and after the year 2007 and zero otherwise.
PostSOX	A binary variable that indicates the Sarbanes-Oxley Act legislation event on July 30th, 2002. PostSOX equals one at and after the year 2002 and zero otherwise.
Tobin's q	The calculation of Tobin's q consists of two parts. For the nominator, I take the book value of total assets, subtract the book value of equity, and add the market value of equity. For the denominator, I use the book value of total assets. All variables are in local currency. *Source: Worldscope*
Sale growth	Sale growth is the two-year geometric average of sale growth. Sale growth is estimated from the inflation-adjusted sales in local currency. *Sources: Worldscope, World Bank WDI database*
Total assets	Total assets is used as a proxy for firm size and is in U.S. dollar. It is also adjusted for inflation. *Sources: Worldscope, World Bank WDI database*
Global industry q	Global Industy Q is the median Tobin's q across all firms within the firm's industry. Firms' industries are classified into ten major divisions based on their NAICS codes. The calculation of Tobin's q consists of two parts. For the nominator, I take the book value of total assets, subtract the book value of equity and add the market value of equity. For the denominator, I use the book value of total assets. *Source: Worldscope*
GDP growth	GDP growth is the annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2010 U.S. dollars. In the summary statistics table, GDP growth is presented in annual percentage, while in all other tables, GDP growth is in the form of natural logarithm. *Source: World Bank WDI database*
Revised Anti-Director Right index (ADRI)	The index is an updated version of the original (La Porta et al. (1998) Anti-Director Right index which has been widely used as a country's corporate governance measure (Doidge, 2004). The index indicates the quality of laws as they are written, such as how strongly the legal system favors minority shareholders against managers or dominant shareholders in the corporate decision-making process, but not as they are really enforced. The index ranges from zero to five. Higher values indicate that minority shareholders have more rights and better protection. *Source: Djankov et al. (2008)*

Table 3.1 (continued)

Variable	Definition
Efficiency of the judicial system	The index measures "the efficiency and integrity of the legal environment as it affects business, particularly foreign firms" produced by the country risk rating agency International Country Risk. The index ranges from zero to ten. Higher values indicate higher efficiency levels judicial system. *Source: La Porta et al. (1998)*
Ownership concentration	Average percentage of common shares owned by the top three shareholders in the ten largest non- financial, privately-owned domestic firms in a given country. A firm is considered privately-owned if the State is not a known shareholder in it. *Source: La Porta et al. (2006)*

3.3.2.1. Dependent variable - Tobin's q

Tobin's q is a measure for valuation. Following Doidge et al. (2004) and La Porta et al. (2002), the estimation for Tobin's q consists of two parts. For the nominator, I take the book value of total assets, subtract the book value of equity, and add the market value of equity. For the denominator, I use the book value of total assets. All variables are obtained from Worldscope database, and they are all in local currency. Tobin's q takes the natural logarithm form in the regression analysis. After removing the firms for which data are not available for *Tobin's q* estimation, there are 560 U.S.-cross-listed firms and 11,595 non-cross-listed firms left in the sample.

It is important to note that, with the similar reasons described by Doidge et al. (2004) and Gozzi et al. (2008), I do not attempt to use the replacement cost in the denominator and to use the market value of debt in the numerator since the required data are generally not available for the sample of firms. Moreover, different accounting methods for the depreciation used in the firms from different countries would cause the inconsistency in the estimation of the replacement cost of assets. The cross-country difference in accounting practices could, in fact, cause the potential bias in the q. To mitigate this concern, Doidge et al. (2004) and Gozzi et al. (2008) suggest including country- fixed effects in the regression analysis.

3.3.2.2. Cross-listing variables

Cross-listing variables represent the U.S. cross-listing status of the foreign firms. They capture the corporate valuation gains/losses of the foreign companies as a consequence of U.S. cross-listing decisions. The positive coefficient of the cross-listing variable indicates the "cross-listing premium" which is the valuation gain that a foreign firm obtains from pursuing cross-listing in the United States and vice versa for the negative estimate.

For the robustness check purpose, there are two alternate measures used for capturing the valuation impact of the U.S. cross-listings in this study. However, please note that, for brevity purpose, in the further discussion I will simply call both measures "*Cross-list*". The first cross-listing measure, "*Cross-list firms*", is a dummy variable that indicates the historical U.S. cross-listing status of a company. It equals one in all firm-year observations that the firm cross-lists and stays cross-listed on the U.S. exchange and equals zero in all other firm-year observations. According to Sarkissian and Schill (2009) and Gozzi et al. (2008), the valuation gain from the foreign equity listing could be transitory with a substantial incline prior to and at the listing event and a profound decline over several years after the listing. The construction of the cross-listing dummy variable as aforementioned would help account for the possibility of transitory valuation effect. Not only that the variable could measure the valuation effect of cross-listing at the event year, it also records such an effect that may vary in all other years that the firms remain listings in the United States. Consequently, the *Cross-list firms* dummy would represent the "average" valuation gains/losses as a result of U.S. cross-listing.

The second measure used to capture the valuation gains/losses from foreign equity listing in the U.S. is called "*Cross-list events*." *Cross-list events* is a dummy variable that indicates an event of U.S. cross-listing. It equals one only in the year that the firms cross-listed on the U.S. exchanges, and zero otherwise. With such a design, Cross-list events variable would hence capture the contemporaneous impact of a U.S. cross-listing event on firm valuation. Since the valuation impact of cross- listing tends to be more pronounced around the cross-listing event time (Gozzi et al., 2008; Sarkissian and Schill, 2009), in the regression analysis, I expect to see a more profound coefficient of *Cross-list events* dummy than I would expect from *Cross-list firms* dummy coefficient.

3.3.2.3. Regulatory event variables

Two regulatory events are included in this study: one is the Rule 12h-6 in 2007, and the other one is the SOX Act of 2002. Even though the main regulatory event of interest in this study is the amendment of the Exchange Act Rule 12h-6 in 2007, it is important to include the announcement of SOX Act in 2002 in the examination. The fact that the details in the SOX Act remain fully effective and untouched by the new Exchange Act of 2007 would mean that the impact of the Rule 12h-6 enactment on the U.S. cross-listed firm valuation observed after 2007 must derive from the conjoint effect between the SOX Act and Rule 12h-6. To disentangle the impacts of these two regulations on the U.S. cross-listing premiums, I construct two binary variables, *PostSOX* and *PostRULE*, with the assigned value of one for all years at and after 2002 and for all years at and after 2007, respectively, and the value of zero otherwise. It is, however, worth to note that the coefficients of *PostSOX* and *PostRULE* themselves would only serve as a time fixed effect. To estimate the variation in U.S. cross-listings premiums in a particular regulatory period, we need to create the new variable by interacting a *Cross-list* dummy variable with the corresponding regulatory event variable. The interaction term *Cross-list* × *PostSOX* would represent the impact of SOX on the valuation gains/losses of U.S. cross-listed firms, whereas the interaction term *Cross-list* × *PostRULE* would illustrate the collective impacts of SOX and Rule 12h-6 on the valuation gains/losses of the U.S. cross-listed firms. In the model where both interaction terms, *Cross-list* × *PostRULE* and *Cross-list* × *PostSOX*, are included, the coefficient of the *Cross-list* × *PostRULE* variable would however indicate the exclusive impact of rule without SOX.

In as much as SOX helps raise corporate governance standard and investor protection of all U.S. exchange-traded stocks, I expect to observe a positive coefficient of *Cross-list* × *PostSOX-PreRULE* which represents the valuation gains from bonding with the more robust legal environment of the U.S. capital market. In contrast, as previously mentioned that the

objective of the new Exchange Act Rule 12h-6 legislation is to eliminate disincentives found in the deregistration requirements and the continuing reporting obligations for non-U.S. companies, it is, hence, likely that the valuation gains from U.S. cross-listings, in general, would decline post Rule 12h-6 due to the surge in investor-perceived risk associated with the U.S.-listed foreign stocks. The negative coefficient of the *Cross-list* × *PostRULE* variable is, therefore, expected.

3.3.2.4. Corporate governance variables

Corporate governance of foreign firms' home countries is of importance in this study. It helps capture the variation in benefits and costs of cross-listing that firms could perceive from each listing location or a certain location pre- and post-regulatory changes. To control the effect of corporate governance in a firm's jurisdiction, I employ several corporate governance measures that are widely used by the literature, including the *Re-vised Anti-Director Rights index* from Djankov, La Porta, Lopez-de Silanes, and Shleifer (2008), the *Efficiency of the judicial system* from La Porta, Lopez de Silanes, Shleifer, and Vishny (1998), and the *Ownership concentration* from La Porta et al. (2006). The *Revised Anti-Director Rights index* is an updated version of the original La Porta et al. (1998) Anti-Director Right index which has been widely used as a measure of the quality of corporate governance as written by law. The *Revised Anti-Director Rights index* provides a better measure of minority shareholder rights by interacting the original anti-director right index with a measure of how well laws are enforced using the "public enforcement index" of Djankov et al. (2008). The *Efficiency of the judicial system* measures "the efficiency and integrity of the legal environment as it affects business, particularly foreign firms" produced by the country risk rating agency, International Country Risk. The index ranges from zero to ten. Higher values indicate higher efficiency levels judicial system. *Ownership concentration* is an average percentage of common shares owned by the top three shareholders in the ten largest non- financial, privately-owned

domestic firms in a given country. Higher values would hence indicate weaker corporate governance.

It is not uncommon to think that the new deregistration rules may not necessarily share a uniform impact on firm valuation across all U.S. cross-listed firms. The reason could partly stem from the differences in corporate governance characteristics of firms. To observe this potential effect, I separate firms into two subsamples according to the strength of their home countries' governance regimes. I construct a "*high-*" and a "*low-*" score group of firms for each corporate governance measure using the median cut off. Firms are indicated as a high- (low-) governance-score group if their countries' corporate governance index is greater than or equal to (less than) the median score of all sample countries.

As previously reviewed, I anticipate the inequivalent valuation impact of the new Exchange Act on deregistration and reporting requirements among foreign firms from countries with different governance regimes. In particular, the costs of the deregulation, such as the potential decline in U.S. cross-listing premiums, likely due to the incline in investor-perceived risk associated with U.S-listed foreign stocks, would be more severe on firms from weaker legal institution countries. We should hence observe a pronounced negative coefficient of the interaction term "*Cross-list* × *PostRULE*" among the poor governance firm group (i.e., low revised anti-director right index, low efficiency of the judicial system, and high ownership concentration).

3.3.2.5. Other control variables - Firm-specific variable

To control the variation in firm valuation which may arise from other time-varying factors at the firm level, I follow Doidge et al. (2004) and Gozzi et al. (2008) by adjusting for a variation in firm growth. *Sale growth* is estimated as the geometric average of annual inflation-adjusted growth in sales over the last two years. Sales data, obtained from the Worldscope Database, is in the U.S. currency and is inflation-adjusted.

3.3.2.6. Other control variables - Industry-specific variable

At the industry level, following Doidge et al. (2004), Doidge et al. (2009) and Gozzi et al. (2008), I control for the time-varying industry effects by including the *Global industry q* variable, which is the median Tobin's q of a firm's industry where firms are classified into ten major SIC divisions.

3.3.2.7. Other control variables - Country-specific variable

To control for the time-varying country effect, I include the gross domestic product (GDP) growth. *GDP growth* is the annual percentage growth rate of GDP at market prices based on the constant local currency. Aggregates are based on constant 2010 U.S. dollars. It is obtained from the World Bank WDI Database. In the summary statistics table, *GDP growth* is presented in annual percentage, while in all other tables, *GDP growth* is in the form of the natural logarithm.

3.3.3. Summary statistics

Table 3.2 reports the summary statistics for the main variables employed in the analysis using all firm-year data of all sample firms.

Table 3.2: Summary Statistics

This table presents summary statistics for the main variable employed in the analysis. The sample includes firm-year observations of foreign firms that cross-listed on U.S. exchanges and foreign firms from the same domicile countries that do not cross-list aboard between 1998 and 2012. Financial firms, investment fund, or trusts and firms incorporated in o shore tax havens are excluded. The definition of all variables is in Table 3.1. Tobin's q and sale growth are winsorized at 1 and 99 percentiles.

	Obs	Mean	Median	Std. Dev	5th percentile	95th percentile
Tobin's q	115167	1.4928	1.1005	1.2733	0.6263	3.5693
Sale growth	115167	0.0345	0.0324	0.1914	-0.2852	0.3413
Total assets (Bil. USD)	115167	1.5162	0.2385	7.1135	0.0143	5.5818
Global industry q	115167	1.1442	1.1114	0.1700	0.9592	1.5295
GDP growth	115167	0.0335	0.0262	0.0395	-0.0246	0.1026
Revised Anti-Director Right index	114967	3.7948	4.5000	1.2916	1.0000	5.0000
Efficiency of the judicial system	112834	8.6802	10.0000	1.7056	6.0000	10.0000
Ownership concentration	98364	0.3261	0.2800	0.1472	0.1800	0.5800

Table 3.3: Univariate Test

This table presents univariate tests for the main variable employed in the analysis. The sample includes cross-listing-year data of foreign firms that cross-listed on all U.S. exchanges between January 1, 1998 and December 31, 2012. Financial firms, investment fund, or trusts and firms incorporated in o shore tax havens are excluded. Firms that are cross-listed on the U.S. exchanges between January 1998 and June 2002 are in the PreSOX group, firms that are cross-listed on the U.S. exchanges between July 2002 and May 2007 are in the PostSOX-PreRULE group, and firms that are cross-listed on the U.S. exchanges between June 2007 and December 2012 are in the PostRULE group. The definition of all variables is in Table 3.1.

	PreSOX (1)			PostSOX-PreRULE (2)			PostRULE (3)			Difference in means			
	# Firms	Mean	Median	# Firms	Mean	Median	# Firms	Mean	Median	(2) - (1)	Std.Err	(3) - (2)	Std.Err
Tobin's q	213	2.7154	1.7205	118	2.7158	2.0122	156	2.5105	1.8311	0.0004	(0.2449)	-0.2053	(0.2328)
Sale growth	213	0.2325	0.2147	118	0.2916	0.2481	156	0.2777	0.2824	0.0592**	(0.0293)	-0.0139	(0.0311)
Total assets (Bil. USD)	213	5.9007	0.5773	118	4.8379	0.2792	156	2.9329	0.2902	-1.0628	(2.5356)	-1.9050	(2.5279)
Global industry q	213	1.3298	1.0439	118	1.2865	1.2502	156	1.1802	1.1755	-0.0433	(0.0309)	-0.1063***	(0.0192)
GDP growth	213	0.0422	0.0388	118	0.0527	0.0370	156	0.0610	0.0614	0.0106***	(0.0039)	0.0083	(0.0053)
Revised Anti-Director Right index	213	3.9531	4.0000	118	3.4364	4.0000	155	2.5935	2.5000	-0.5166***	(0.1368)	-0.8429***	(0.1791)
Efficiency of the judicial system	212	9.0908	9.2500	118	8.4470	9.2500	155	7.8887	6.7500	-0.6438***	(0.1594)	-0.5583***	(0.1821)
Ownership concentration	206	0.4035	0.4000	96	0.4394	0.4000	82	0.4330	0.4000	0.0358**	(0.0140)	-0.0063	(0.0167)

Table 3.3 presents the univariate tests for the U.S. cross-listed firms' characteristics at the time of cross-listings. Firms are categorized into groups by mean of the period when they pursue the U.S. cross-listings. Firms that are cross-listed on the U.S. exchanges between January 1998 and June 2002, between July 2002 and May 2007, and between June 2007 and December 2012 are classified as the PreSOX, PostSOX-PreRULE, and PostRULE group, respectively.

On average, the results show that the valuation of the U.S. cross-listed firms at the time of cross-listing rises after SOX and then fairly drops following the Rule. The median scores illustrate a comparable pattern but even more pronounced. For the firm size, the results demonstrate a decreasing trend in the U.S. cross-listed firms' total assets following the SOX's and the Rule's passage. As documented and discussed by Doidge et al. (2009), a shift in attributes of the firms worldwide could contribute to this observed trend and thus should not be immediately implied as the aggravation in the U.S. market quality.

The falling firm's growth opportunities and a significant decline in the corporate governance characteristics observed among the PostRULE firm group together with the diminishing stringency in the U.S. disclosure and reporting regulations brought by the Rule 12h-6 Act should, however, draw our close attention. As described by the bonding theory, foreign firms should benefit less from legally bonding with the U.S. laws and regulations when their growth opportunities begin to recede. The weakening protection and information environment via the deregulations could, likewise, undermines the U.S. legal bonding benefits. The declining growth opportunities and the influx of firms with poorer governance qualities into the U.S. market during the PostRULE period should hence raise urgent concern on whether or not the adoption of Exchange Act Rule 12h-6 could deviate the foreign firms' intention of accessing the U.S. capital market from the conventional, legally-bonding purpose.

Figure 3.1: U.S. Cross-Listing Premium Plot

This figure presents the valuation premiums of foreign firms cross-listed on U.S. major exchanges, including NYSE, AMEX, and NASDAQ over the period between 1998 and 2012. U.S. cross-listing premium is a measure of the premium valuation associated with U.S. cross-listings. To compute cross-listing premium, I first estimate the median of Tobin's qs of non-cross-listed firms by home countries and by years. I then subtract the calculated median from Tobin's qs of U.S. cross-listed firms with matching home country and matching year data. And, finally, I estimate the cross-listing premium as the median of all excess qs by years.

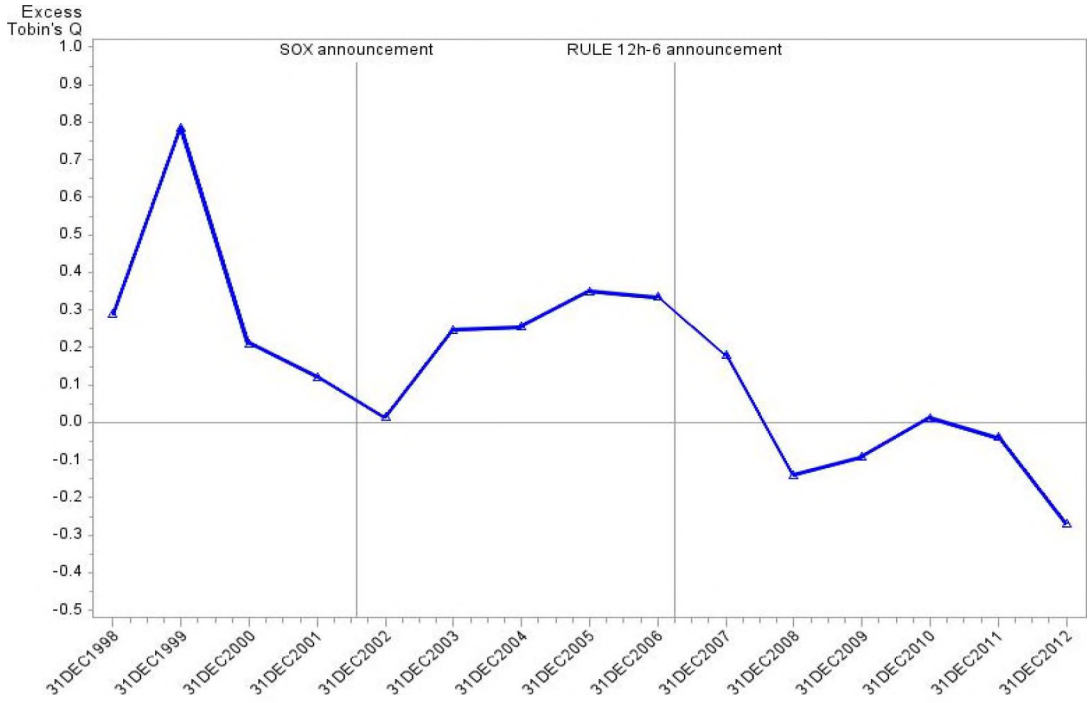

Figure 3.1 illustrates the evolution of U.S. cross-listing premiums over the periods of study in a graphical version. Cross-listing premiums are basically a premium valuation that foreign firms can additionally gain, relative to their peer, from listing their shares on U.S. exchange. The valuation plot gives us a further insight on the variation in U.S. cross-listing premiums over the regulatory periods. There are two key findings presented in this graph that are worth looking at. First, by disregarding the year 1999, 2002, and 2007-2008 in which the findings might possibly be swayed by the impacts of U.S. financial crises, I find that U.S. cross-listing premiums in every year within the PostSOX-PreRULE period are all positive and steadily

increase. This trend of U.S. cross-listing premiums is rather exclusive to the PostSOX-PreRULE period. Among others, the tougher disclosure and reporting requirements of the U.S.-exchange listing standard brought by SOX could help promote the better corporate valuation (Duarte et al., 2014; Li et al., 2008) and leads to these premiums. Second, consistent with my argument with respect to the adverse impact of the new Exchange Act Rule 12h-6 on U.S. cross-listing premiums, the valuation trait shows a significant drop in U.S. cross-listing premiums Post-Rule 12h-6. The premiums appear the fluctuate around zero indicating the disappearing benefits of U.S. legal bonding, according to bonding hypothesis. This evidence further reinforces my argument that the enactment of Rule 12h-6 likely weaken the valuation premiums that foreign firms could once obtain through cross-listing on U.S. exchanges.

3.3.4. Research Method

Studying the effect of regulation has proven to be challenging. One main reason of such a challenge arises from the lack of a control group of comparable, publicly listed companies that are immune to the new regulation (Hochberg et al., 2009). As this study intends to investigate the economic consequence of the new Exchange Act Rule 12h-6, I borrow the logical argument made by Zingales (2007),stating that a firm's foreign listing decision is generally most sensitive to the costs and benefits offered by each listing location, and, with a wide range of alternative markets to choose from, the ow international listing serves as an effective indicator of a market's legal standing just like "the canary in the mine shaft" (an analogy used by Zingales (2007)). Applying this rationale, the fact that non-cross-listed firms are most likely to be unaffected by the legislations in other countries, whereas the cross-listed firms would wholly expose themselves to the new regulatory environment of the host country has made these two groups of firms the most legit sample for research studies in this field.

In this paper, I adopt the empirical strategy used by La Porta et al. (2002) who investigate the link between legal investor protection and corporate valuation. La Porta et al. (2002) argue that when investor rights are well protected by the law, the risk of expropriation by insiders would become weakened. Outside investors would hence be more willing to pay more for financial assets since the likelihood of getting back the return from their investment now becomes more certain. Following this rationale, I investigate whether the new deregistration rules is detrimental to the U.S. investor protection system and the information environment of the U.S. capital market for foreign stocks by measuring the variation in valuation premiums of U.S. cross-listings as a consequence of the new rules. I regress Tobin's q, which is a measure for firm valuation, on the two related U.S. regulatory event dummies, a cross-list dummy, and their interaction terms.

Two things are worth mentioned here. First, despite that the focal point of this study is to analyze the valuation impact of the Exchange Act Rule 12h-6, the fact that the details in the SOX Act remains fully effective and untouched by the new Exchange Act makes it necessary to take the SOX effect into consideration when estimating the effect of the new rule. Leaving the SOX variable out of the analysis would result in an omitted-variable bias and a biased estimate. The study by Ghosh and He (2017), for instance, fails to adjust for the SOX factor when investigating the economic impact of Exchange Act Rule 12h-6 on the benefits of U.S.-exchange cross-listing. Failure to account for the SOX impact would hence lead to an upward bias in their estimated impact of Rule 12h-6 on cross-listed firms' valuation. For this reason, I incorporate both SOX and Rule 12h-6 event dummies in the model.

Second, the coefficients of these two regulatory variables, *PostSOX* and *PostRULE*, themselves, however, only serve as time fixed effects. It is the coefficients of the interaction terms between the regulatory event indicators and a cross-list dummy which indicate the valuation impacts of the U.S. regulations on cross-listed firms. In essence, in the model

specification that incorporates all regulatory dummies, a cross-listing dummy, and their interaction terms, the *Cross-list* × *PostSOX* coefficient would represent the valuation impact of the SOX Act, after controlling for the effect of Rule 12h-6. Likewise, *Cross-list* × *PostRULE* coefficient would illustrate the economic impact of Exchange Act Rule 12h-6 on U.S. cross-listing premiums, after controlling for the valuation impact of SOX.

Besides the regulatory elements, I control for the variation in firm valuation which may arise from other time-varying factors at firm-, industry-, and country-level by including firm, industry, and country characteristic variables. In the panel regression analysis, I also account for the time-invariant factors that could be correlated with firm valuation by using firm fixed effect. In the ordinary least square (OLS) regression, beside all variables mentioned earlier, I control for the variation in firm valuation that may arise from other time-invariant factors at industry-, and country-level by including industry dummies and country dummies. I do not include individual year dummy in the model since the regulatory dummy variables could serve the same purpose. The main model specification of this study is as follows:

$$\begin{aligned}\ln(1 + \text{Tobin's q}) = {} & \beta_0 + \beta_1 \text{Crosslist} \\ & + \beta_2 \text{PostRULE} \\ & + \beta_3 \text{PostSOX} \\ & + \beta_4 \text{Crosslist} \times \text{PostRULE} \\ & + \beta_5 \text{Crosslist} \times \text{PostSOX} \\ & + \beta_6 \ln(1 + \text{Sales growth}) \\ & + \beta_7 \text{Global industry q} \\ & + \beta_8 \ln(1 + \text{GDP growth}) + \varepsilon_{it}\end{aligned} \tag{3.1}$$

Although U.S. cross-lists could result in higher valuation, as posited by bonding theory, it is also likely that high-value firms, which normally would accompany with high growth opportunity, would be more likely to seek cross-listing in the U.S in order to gain access to cheaper equity financing necessary for their business expansion. Such a circumstance is considered an endogeneity issue and could cause the estimation bias. To address this concern, I employ the two-stage least square (2SLS). There will be two equations involved in the 2SLS model: one is the selection equation (listing decision), and the other one is the valuation equation. The challenge typically found in the endogeneity model is the choice of instrumental variables to be used in the selection equation. The key requirement for a proper instrumental variable is that it must be highly correlated with the dependent variable in the first-stage model and should have very minimal correlation with the dependent variable in the second-stage model. In their study, Doidge et al. (2004) argue that firms would generally make their listing decisions in accord with their characteristics at the time of listing. As country characteristics tend to change slowly, relative to firm characteristics, listing decision made on country characteristics would be relatively straightforward but is apt to be problematic when taking firm characteristics into account. Specifically, it is almost certain that firm characteristics such

growth opportunities would be strongly correlated with firm value. Adding these characteristics could make the selection and valuation equations estimate the same relation. According to this reason, Doidge et al. (2004) did not include a number of firm characteristic variables that could possibly affect the listing decisions. The only firm characteristic variable that was included in Doidge et al.'s (2004) selection model is the log of sales as a proxy for firm size since larger firms are more likely to cross-list. Following Doidge et al., I incorporate exogenous variables at all levels, but firm level, such as industry-specific, exchange-specific, and country-specific factors in the selection equation. However, instead of using total sales, I follow Frésard and Salva (2010) and employ the log of total assets as an instrumental variable. Because both total assets and total sales could similarly capture the firm size while total assets tend to be less correlated with firm valuation than total sales, using total assets as an instrumental variable should induce a better result. To perform a robustness check, I also use Big 5 auditor variable as an alternative instrumental variable. Due to their costly charges, from the economy of scale perspective, it is very likely the main clientele of Big 5 auditor company would a large- firm group. A Big 5 auditor variable would hence also be a proxy for firm size.

3.4. Empirical results

3.4.1. Evidence on the economic impact of the Rule 12h-6 on U.S. cross-listing premiums

Table 3.4 report a series of regression results of the natural logarithm of Tobin's q on two alternative cross-listing variables and their interactions with regulatory dummy variables. The table presents the results of panel regression analyses using firm fixed effect and the results from the pooled OLS regression analyses with industry and country dummies. Since I already account for the possible variation in Tobin's q as a result of time change by incorporating the regulatory dummy variables in the model, the year dummies are not therefore not included.

Consistent with a general prediction of bonding theory, the *Crosslist* coefficients in all specifications of Table 3.4 are positive. As expected, the magnitude of *Cross-list event* coefficients, in Model 3 and 4, are not only larger, almost twice of the size of the *Cross-list firms* coefficients in Model 1 and 2, but also highly significant. This evidence is consistent with the empirical findings documented by Sarkissian and Schill (2009) and Gozzi et al. (2008) suggesting that the valuation gains from foreign equity listing could be transitory with a substantial incline prior to and at listing event and a profound decline over several years after the listing. On this account, the model with the *Cross-list firms* variable would provide us more on a long-run perspective while the model with *Cross-list event* variable tends to mainly focus on the short run, the cross-listing year only.

In line with the main hypothesis, the negative significant coefficients of *Crosslist* × *PostRULE* in all specifications of Table 3.4 indicate a negative effect of Rule 12h-6 on U.S. cross-listing premiums. Consistent with the valuation plot shown in Figure 3.1 showing the *PostRULE* trend of U.S. cross-listing premiums that fluctuates around zero, the insignificant net U.S. cross-listing premiums Post-Rule12h-6 reported in the Post-estimation section of Table 3.4, Specification (1) and (2), demonstrates a disappearing benefit of U.S. cross-listings on the corporate valuation in a long run. Also, positive significant net *PostRULE* premiums observed in Specification (3) and (4) give us additional insights on the corporate valuation effect of Rule 12h-6. First, it indicates that the valuation benefit of U.S. cross-lists may still exist, at least in a short run, particularly in the year that a firm list on a U.S. exchange. Second, a decline in a *PostRULE* net cross-listing premium, relative to the *PostSOX-PreRULE* premiums, further implies the diminishing of a short-run benefit on valuation of U.S. cross-listings. Taken together, several specifications, measures, and econometric approaches used to investigate the valuation impact of Rule 12h-6 on U.S. cross-listed firms as shown in Table 3.4 jointly suggest that the main finding is relatively robust. As illustrated by a significant

decline in cross-listing premiums observed after the enactment of the new rules, an overall result infers that the Rule 12h-6 tends to do more harm than good to the U.S. capital market.

Table 3.4: Baseline - The Impact of Exchange Act Rule 12h-6 Enactment on U.S. Cross-Listing Premiums

This table presents results from panel data analyses with firm fixed effects and pooled OLS regression that estimate the valuation impact of the Exchange Act Rule 12h-6 on foreign firms pursuing U.S. cross-listings between 1998 and 2012. The sample includes all firm-year observations of foreign firms cross-listed on U.S. major exchanges and all firm-year observations of non-cross-listed firms incorporated in the same countries as the U.S. cross-listed firms over the period from 1998 to 2012. Financial firms, investment fund, or trusts and firms incorporated in o shore tax havens are excluded. The dependent variable in each regression is ln(1+Tobin's q). Tobin's q is computed as (market value of equity + (total assets - book value of equity)) / total assets (all variables are in local currency). In the columns "Cross-list firms", a binary variable "cross-list" indicates the U.S. cross-listing status of the firm. It equals one in all firm-year observations that the firm cross-lists and stays cross-listed on U.S. exchanges, and zero otherwise. In the columns "Cross-list events", a binary variable "cross-list" indicates the event of U.S. cross-listing. It equals one in the year that firms cross-listed on U.S. exchanges and zero otherwise. PostRULE is a binary variable that equals one for the years at and after year 2007 (the enactment year of Exchange Act Rule 12h-6). PostSOX is a binary variable that equals one for the years at and after year 2002 (the amendment year of Sarbanes-Oxley Act). The definitions of all other variables are in Table 3.1. Standard errors (in parentheses) are adjusted for clustering at a firm level. They are computed assuming observations are independent across firms, but not within firms. ***, **, * denotes statistical significance level at 1%, 5%, and 10%, respectively. In the post-estimation, the U.S. cross-listing premiums in a given regulatory period are estimated. F-statistics (in brackets) are for testing the null hypothesis that the U.S. cross-listing premium in a specified period equals zero.

Variable	Cross-list firms		Cross-list events	
	Model 1	Model 2	Model 3	Model 4
Crosslist	0.0348	0.0245	0.1186***	0.1538***
	(0.0297)	(0.0283)	(0.0329)	(0.0362)
PostRule	0.0042	0.0187***	0.0010	0.0143***
	(0.0028)	(0.0031)	(0.0028)	(0.0031)
PostSOX	-0.0580***	-0.0390***	-0.0553***	-0.0343***
	(0.0030)	(0.0034)	(0.0030)	(0.0034)
Crosslist × PostRULE	-0.0998***	-0.1175***	-0.0037	-0.1609***
	(0.0162)	(0.0181)	(0.0427)	(0.0501)
Crosslist × PostSOX	0.0395	0.0842***	0.0911**	0.0965*
	(0.0241)	(0.0260)	(0.0439)	(0.0528)
ln(1+Sales growth)	0.1109***	0.1862***	0.1098***	0.1853***
	(0.0055)	(0.0074)	(0.0055)	(0.0074)
Global industry q	0.4004***	0.3935***	0.3994***	0.3924***
	(0.0082)	(0.0100)	(0.0082)	(0.0100)
ln(1+GDP growth)	0.4128***	0.2695***	0.4076***	0.2628***
	(0.0285)	(0.0369)	(0.0284)	(0.0369)
Intercept	0.4131***	0.2629***	0.4138***	0.2629***
	(0.0090)	(0.0368)	(0.0090)	(0.0368)
Observations	115167	115018	115167	115018
Adjusted R^2	0.1120	0.2455	0.1133	0.2453
Regression Model	Firm FE	Pooled OLS	Firm FE	Pooled OLS
Industry effect?	n/a	Yes	n/a	Yes
Country effect?	n/a	Yes	n/a	Yes

Table 3.4. (continued)

Variable	Cross-list firms		Cross-list events	
	Model 1	Model 2	Model 3	Model 4
Post-estimation: Testing for U.S. cross-listing premium				
PostRULE premium	-0.0255	-0.0088	0.2060***	0.0893***
	[1.0345]	[0.2820]	[42.9095]	[7.7842]
PostSOX-PreRULE premium	0.0743***	0.1087***	0.2097***	0.2502***
	[10.9261]	[27.1779]	[52.5679]	[43.4068]

3.4.2. Evidence on the economic impact of the Rule 12h-6 on U.S. cross-listing premiums of firms with different governance characteristics

Table 3.5 provides evidence for the H2 hypothesis, testing whether the valuation impact of Rule 12h-6 would accentuate U.S. cross-listing premium experienced by firms from different core constituencies differently. To detect such effects, I separate firms into two subsamples using their countries' corporate governance measure. These governance variables include the revised version of anti-director rights index from Djankov et al. (2008), the efficiency of the judicial system from La Porta et al. (1998), and the ownership concentration from La Porta et al. (2006). I construct a "*high-*" and a "*low-*" score group of firms for each individual corporate governance measure using the median cut off. Firms are indicated as a *high- (low-)* governance-score group if their countries' corporate governance index is greater than or equal to (less than) the median score of all sample countries. Except the ownership concentration index, firms in a high-score group indicates their stronger corporate governance attribute.

Table 3.5: Panel Regression Analysis - The Impact of Exchange Act Rule 12h-6 Enactment on U.S. Cross-Listing Premiums of Firms from Good Versus Poor Corporate Governance Countries

This table presents results from panel data analyses with firm fixed effects that estimate the valuation impact of the Exchange Act Rule 12h-6 on foreign firms from good vs. poor corporate governance countries that pursues U.S. cross-listings between 1998 and 2012. The sample includes all firm-year observations of foreign firms cross-listed on U.S. major exchanges and all firm-year observations of non-cross-listed firms incorporated in the same countries as the U.S. cross-listed firms over the period from 1998 to 2012. Financial firms, investment fund, or trusts and firms incorporated in o shore tax havens are excluded. The dependent variable in each regression is ln(1+Tobin's q). A binary variable "cross-list" in all models indicates the U.S. cross-listing status of the firrm. It equals one in all firm-year observations that the firm cross-lists and stays cross-listed on U.S. exchanges, and zero otherwise. PostRULE is a binary variable that equals one for the years at and after year 2007 (the enactment year of Exchange Act Rule 12h-6). PostSOX is a binary variable that equals one for the years at and after year 2002 (the amendment year of Sarbanes-Oxley Act). Firms are indicated as high- (low-) governance-score group if a specified corporate governance measure of their home countries is greater than or equal to (less than) the median value. Standard errors (in parentheses) are adjusted for clustering at a firm level. They are computed assuming observations are independent across firms, but not within firms. ***, **, * denotes statistical significance level at 1%, 5%, and 10%, respectively. In the post-estimation, the U.S. cross-listing premiums in a given regulatory period are estimated. F-statistics (in brackets) are for testing the null hypothesis that the U.S. cross-listing premium in a specified period equals zero.

Variable	Revised Anti-Director Right Index		Efficiency of the judicial system		Ownership concentration	
	High	Low	High	Low	High	Low
Cross-list	0.0604*	-0.0190	0.0652*	-0.0647	-0.0008	0.1917**
	(0.0364)	(0.0450)	(0.0345)	(0.0486)	(0.0314)	(0.0854)
PostRule	-0.0424***	0.0846***	-0.0377***	0.0830***	0.0500***	-0.0443***
	(0.0033)	(0.0049)	(0.0024)	(0.0064)	(0.0050)	(0.0024)
PostSOX	-0.0187***	-0.1395***	-0.0233***	-0.1584***	-0.0986***	-0.0208***
	(0.0032)	(0.0068)	(0.0030)	(0.0085)	(0.0058)	(0.0032)
Cross-list × PostRULE	-0.0606***	-0.1736***	-0.0646***	-0.1629***	-0.1338***	-0.1264***
	(0.0186)	(0.0328)	(0.0210)	(0.0250)	(0.0176)	(0.0478)
Cross-list × PostSOX	0.0045	0.1038**	-0.0224	0.1966***	0.0993***	-0.1128*
	(0.0271)	(0.0505)	(0.0280)	(0.0450)	(0.0260)	(0.0632)
ln(1+Sales growth)	0.1160***	0.0940***	0.1228***	0.0925***	0.0931***	0.1428***
	(0.0071)	(0.0085)	(0.0069)	(0.0089)	(0.0068)	(0.0090)
Global industry q	0.3623***	0.4786***	0.3654***	0.4824***	0.4380***	0.3611***
	(0.0099)	(0.0148)	(0.0098)	(0.0156)	(0.0121)	(0.0113)

Table 3.5 (continued)

Variable	Revised Anti-Director Right Index		Efficiency of the judicial system		Ownership concentration	
	High	Low	High	Low	High	Low
ln(1+GDP growth)	0.1324***	0.8468***	0.1580***	0.8155***	0.6579***	-0.0567**
	(0.0318)	(0.0576)	(0.0266)	(0.0693)	(0.0433)	(0.0289)
Intercept	0.4002***	0.4362***	0.4045***	0.4122***	0.4258***	0.3850***
	(0.0108)	(0.0163)	(0.0107)	(0.0181)	(0.0140)	(0.0121)
Observations	75606	39561	71732	43435	63724	51443
Adjusted R^2	0.1186	0.1423	0.1427	0.1129	0.1068	0.1600
Post-estimation: Testing for U.S. cross-listing premium						
PostRule premium	0.0043	-0.0888**	-0.0219	-0.0310	-0.0352	-0.0474
	[0.0196]	[6.1012]	[0.5198]	[0.7586]	[1.7355]	[0.4313]
PostSOX-PreRULE premium	0.0649**	0.0848***	0.0428	0.1319***	0.0986***	0.0789
	[5.0236]	[12.0335]	[2.6951]	[15.3237]	[17.0837]	[1.3570]

Evidently, the negative, significant coefficients of *Cross-list* × *PostRULE* variable and the insignificant *PostRULE* premium, shown in the post-estimation test, in all specifications are consistent with the main prediction on the adverse effect of Rule 12h-6 earlier discussed. These findings illustrate that, on the whole, the negative impact of Rule 12h-6's passage on firm valuation is widely shared across all cross-listed firm groups. When looking closely at the result of each governance group, I find that firms from countries with more robust governance system tend to get much less impact from the new deregistration rule than those firms residing in the countries of which corporate governance systems are relatively weak. This evidence implies that the lowering quality of the U.S. investor protection induced by the Rule 12h-6's passage could lead to the lower dependability of the U.S. legal system. Investors trading on non-U.S. stocks, who once could solely rely on the U.S. disclosure and protection system, must now seek an additional protection from the legal institutions of a foreign country in which a traded firm is located. As such, we would observe the less pronounced impact of Rule 12h-6 among good governance firms. The positive, significant coefficients of *Cross-list* × *PostSOX* variable in all specifications of weak governance firms also further strengthens my conjuncture. This result suggests that foreign firms, especially those from the poor legal regime countries, benefit the most from bonding strongly with the solid laws and regulations such as the SOX requirements. And, these benefits would dwindle when the strength in this legal bonding is getting lower. Taken together, these findings indicate that the adoption of Exchange Act Rule 12h-6 likely weaken the merit of U.S. legal bonding.

3.4.3. Endogeneity check

The endogeneity issue that is in the concern of this study arrives from the possible simultaneous causality issue between firm valuation and cross-listing variable. Perhaps due to the underdevelopment of the capital market in home countries, firms with high growth

opportunity would be more likely to seek cross-listings in a more advanced economy such as the U.S. in order to gain access to better equity financing necessary for funding their expansion. Since growth is one of the factors that investors would normally take into account when assessing the equity price, a high-growth firm hence often turn out to be a high-valuation firm. From this angle, it is reasonable to say that high-valuation firms are more likely to pursue U.S. cross-listings. Similarly, at another angle, it is also possible to say that U.S. cross-listing would help promote the valuation of firms as cross-listed firms would have access to a cheaper equity capital.

Table 3.6: Two-Stage Least Square Estimates of the U.S. Cross-Listing Premiums

This table presents results of the second stage of two-stage least square regression using panel data with firm fixed effects that estimate the valuation impact of the Exchange Act Rule 12h-6 on foreign firms pursuing U.S. cross-listings between 1998 and 2012. The sample includes all firm-year observations of U.S. cross-listed and non-cross-listed firms. Financial firms, investment funds, trusts, and firms from tax heaven countries are excluded. The dependent variable in each regression is ln(1+Tobin's q). A binary variable "cross-list" in all models indicates the U.S. cross-listing status of the firm. It equals one in all firm-year observations that the firm cross-lists and stays cross-listed on U.S. exchanges, and zero otherwise. In model 1, the currency-and-inflation-adjusted total assets is used as the instrumental variable. In model 2, a binary variable Big 5 auditor is used as the instrumental variable. Big 5 auditor equals one in a firm-year observation that a firm employed a big 5 auditor and zero otherwise. PostRULE is a binary variable that equals one for the years at and after year 2007. PostSOX is a binary variable that equals one for the years at and after year 2002. Standard errors (in parentheses) are adjusted for clustering at a firm level. They are computed assuming observations are independent across firms, but not within firms. ***, **, * indicates that cross-listing premium is statistically different from zero at 1%, 5%, and 10% statistical significance level, respectively.

Variable	Model 1	Model 2
Cross-list	0.0337***	0.0245**
	(0.0093)	(0.0123)
PostRule	0.0625***	0.0169***
	(0.0128)	(0.0041)
PostSOX	-0.0627***	-0.0789***
	(0.0171)	(0.0143)
Cross-list × PostRULE	-0.0943***	-0.0713***
	(0.0357)	(0.0267)
Cross-list × PostSOX	0.0313	0.0485***
	(0.0281)	(0.0123)
Global industry q	0.4655***	0.4598***
	(0.0202)	(0.0142)
ln(1+GDP growth)	0.3992***	0.5098***
	(0.0586)	(0.0398)
Observations	136365	136884
Instrumental variable	ln(Total assets)	Big 5 auditor
First-stage F-statistic for weak instrument	22.38	16.08

To account for the possible simultaneous causality issue that could cause an estimation bias in my analyses, I employ the two-stage least square (2SLS). The estimations from 2SLS models are documented in Table 3.6. The specifications in both models are the same, and, as suggested by Doidge et al. (2004), they both use firm size as an instrumental variable. The difference between the two models is that one uses the log of total assets as the proxy for firm size, as performed by Frésard and Salva (2010), and the other one uses a Big 5 auditor indicator as a firm size measure. The results from both model specifications are much alike: both shows negative estimations on *Cross-list* × *PostRULE* coefficient indicating an adverse impact of the Rule 12h-6 on U.S. cross-listing premiums. The overall results are also consistent with the main findings earlier documented. The F-statistics that are greater than 10 in all selection equations indicate that both variables used as an instrumental variable perform sufficiently well. The weak instrument is not an issue in this analysis.

3.5. Conclusion

In this study, I investigate the corporate valuation impact of the recent regulatory movement signifying "race to the bottom" practice employed by U.S. Securities and Exchange Commission in 2007 via the deregulation on deregistration and disclosure requirements for foreign private issuers, so called Rule 12h-6. According to Fernandes et al. (2010), the emphasis of Rule 12h-6 is found on the fact that it is considered to be the first significant reduction in mandatory disclosure and reporting obligations since the Securities Act of 1933 and the Securities Exchange Act of 1934. The Exchange Act Rule 12h-6 has introduced more leniency to the requirements governing when a foreign company may terminate its Exchange Act reporting regime. It is very likely that the removal of several regulatory disincentives and uncertainty of exiting the U.S. markets that the SEC

made for the non-U.S. firms could encourage more international listings in the U.S. markets. At the same time, the consequence of the new rules, which enables foreign firms to terminate their registrations and their reporting obligations with the U.S. markets more freely, could amplify the risks faced by U.S. investors from losing protection and losing access to information if the currently-traded foreign firms terminate their U.S listings and leave the market. If this is the case, the U.S. cross-listing premiums, which is the valuation premium that foreign firms would obtain from listing their equities in the U.S. markets, would become weaken after the enactment of the new deregistration rules.

Using a sample of all foreign listing events on U.S. major exchanges between 1998 and 2012 and non-cross-listed firms domiciled in the same countries, the results from the panel regression analysis and a number of robustness checks, including the endogeneity test, show a significant negative association between U.S. cross-listing premiums and the enactment of Rule 12h-6. This evidence provides a strong support for my assumption that the "race to the bottom" policy adopted by the SEC via the Exchange Act Rule 12h-6 enactment in 2007 is detrimental to the U.S. capital market. An evidence of a larger decline in U.S. cross-listing premiums observed during the post Rule 12h-6 period among firms incorporated in countries with weaker legal institution frameworks is noteworthy as the exacerbation of U.S. cross-listing premiums encountered by these firms could fairly indicate the deterioration in the strength of U.S. disclosure and protection system, and thereby the diminishing benefits of U.S. legal bonding.

In sum, based on my empirical findings, the 2007 SEC "race to the bottom" policy does not seem to be a good regulatory movement for the U.S. markets, of which the competitive advantage and the core value have long been founding primarily on the "race toward the top" principle. A significant decline in U.S. cross-listing premiums of firms observed after

the adoption of the new deregistration rules conveys a dangerous aw in the 2007 deregulation that need an urgent attention from the U.S. authorities.

CHAPTER IV

ESSAY III. DEREGULATION ON THE DEREGISTRATION OF FOREIGN ISSUERS: DO U.S. INVESTORS VIEW NON- U.S. FIRMS WORSE THAN BEFORE?

4.1 Introduction

An extensive literature has been conducted to uncover a corporate motive for cross-listing and the potential benefits that drive such a corporate decision. Despite the existence of various benefits from cross-listing, such as liquidity improvement (Chung,2006; Eleswarapu and Venkataraman, 2006; Moulton and Wei, 2009; Silva and Chávez, 2008), broader shareholder base (Pagano, Röell, and Zechner,2002), visibility, recognition, and reputation enhancement (Baker, Nofsinger, and Weaver, 2002; King and Segal,2009; Merton, 1987; Siegel, 2005), enabled access to larger pools of capital (Lins, Strickland, and Zenner, 2005; Reese and Weisbach, 2002) with cheaper costs (Hail and Leuz, 2006, 2009), prior research finds that not every host market has the same capability to provide such cross-listing outcomes (see, e.g., Beny, 2005; Cumming, Johan, and Li, 2011; Doidge, 2004; Doidge, Karolyi, and Stulz, 2009). It appears that these benefit attributes tend to develop chiefly in a securities market that is backed by a strong legal protection and enforcement system (Dyck and Zingales, 2004; La Porta, López de Silanes, Shleifer, and

Vishny, 1997, 1998; Shleifer and Vishny, 1997; Shleifer and Wolfenzon, 2002). With its prestige as the world-class capital market with the highest listing standards, the U.S. market has been cited as an exclusive listing location to offer superior cross- listing benefits that can rarely be observed elsewhere (see, e.g. Doidge et al., 2009).

According to the "Bonding hypothesis" posited by Coffee (1999, 2002) and Stulz(1999), cross-listing on the U.S. exchanges obliges a foreign firm to obey minority investor rights and to commit with detailed disclosure requirements. Cross-listing in the U.S. also put firms into a higher degree of exposure to regulatory oversight, enforcement, class actions, and scrutiny of reputational intermediaries (i.e., underwriters, rating agencies, auditors, and securities analysts), which, thereby, restrains firms' insiders from the private benefits extraction. For this reason, by "bonding" with the U.S. securities laws and enforcement system, firms can enhance the quality of investor protection and information environment, and, as a result, reap the same benefits of being listed on the U.S. exchanges enjoyed by the other local U.S. firms.

Despite such rationale, there is no consensus as to whether or not a foreign firm can completely bond with the U.S. laws. The first impediment to the legal bonding of U.S.-listed foreign firms arrives from the questionable effectiveness of the U.S. legal enforcement. Siegel (2005) focusing on illegal asset tunneling by insiders of Mexican firms cross-listed in the U.S. suggests that the SEC's enforcement actions against non-U.S. firms, in general, has been rare, yet ineffective. In line with Siegel's findings, Kedia and Rajgopal (2011) report that the SEC tends to conduct its investigation on firms that are located closer to its office. Worse, Licht, Poliquin, Siegel, and Li (2013) study when the U.S. Supreme Court signaled its intention, on March 29, 2010, to confine the reach of the U.S antifraud regime to geographical limit and explain that this court action would take away the

protection of the antifraud regime from investors of U.S-listed foreign firms.

Additionally, researchers point out that several exemptions in the U.S. corporate governance system and listing standards made for a foreign private issuer[11] (hereafter, the terms "foreign private issuer", "foreign issuer", and "FPI" will be used interchangeably throughout the paper) as part of the regulatory competition among financial markets could also act as another barrier the legal bonding success. According to the observation by the U.S. Chamber of Commerce in an amicus brief[12], "The U.S. Securities and Exchange Commission (SEC) has recognized that enabling foreign companies to avoid the application of U.S. securities law requirements in appropriate circumstances will make the U.S. a more attractive venue for listing and investment" (p.26). It, however, appears that these special treatments for foreign issuers have set the rules and regulations mandating equity issuers in the United States to two: one is for U.S. domestic issuers, and another is for non-U.S. companies (Licht, 2003). If this is the case, the insiders of cross-listed firms can take advantage of these lax U.S. laws and avoid legal bonding and the resulting regulatory costs altogether.

Notwithstanding many exemptions from the U.S. securities laws that the SEC has made for foreign issuers, on March 21, 2007, the SEC further includes an additional relief from the U.S. disclosure and reporting requirements to the foreign issuers through the adoption

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[11] The federal securities laws define a "foreign private issuer" ("FPI") as any issuer, such as a corporation or other organization other than a foreign government, that is incorporated or organized under the foreign jurisdiction's laws. To obtain FPI status, a foreign company must also have (1) less than 50% of its outstanding voting securities held of record, both directly and indirectly, by residents of the United States, (2) the majority of non-U.S.-resident executive officers and directors, and (3) no more than 50% of its assets located in the United States or principally administered its business outside the United States.

[12] Available at https://www.americanbar.org/content/dam/aba/publishing/preview/publiced_preview_briefs_pdfs_09_10_08_1191_RespondentAmCuUnitedKingdom.authcheckdam.pdf

of the Exchange Act Rule 12h-6. According to the SEC statement[13], the primary purpose of the adoption of Exchange Act Rule 12h-6 is to remove the burdens and uncertainties associated with the exit process serving as a disincentive to U.S. cross-listing decisions of foreign issuers so as to improve the attractiveness and the competitiveness of the U.S. market in the global competition for international listings. The emphasis of Rule 12h-6 besides being "the first significant *deregulation* of U.S. disclosure requirements since the passage of the 1933/1934 Exchange and Securities Acts" (Fernandes, Lel, and Miller, 2010, p.130) is that it permits an FPI, for the first time, to *terminate* its reporting obligations under the Exchange Act. The rule also softens the qualification criteria for deregistration to be more achievable so that an FPI can terminate its registration and reporting obligation with much less effort and lower costs.

Apparently, the combination of lax governance requirements governing the non-U.S. firms that become worse after the Rule 12h-6 adoption and the weakness found in the legal enforcement system against the non-U.S. firms would together raise severe doubt over the validity of legal bonding. Existing literature that examines the issue of bonding take different perspectives to capture the validity of legal bonding, mostly by the success of legal cases against cross-listed firms. In this study, I use a different approach to get at this important issue by utilizing the emphasis of U.S. cross-listing on firm valuation and the uniqueness of the recent deregulation on deregistration requirements for FPIs. If the concept of complete legal bonding subsequent to cross-listing is valid, then, followed Aggarwal, Erel, Stulz, and Williamson (2008), I expect to observe the parity in valuation

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[13] Available at https://www.sec.gov/rules/final/2007/34-55540.pdf

between the U.S. domestic and the U.S.-listed foreign firms with similar attributes. This uniformity in firm valuation should also be independent of strength in legal regimes in firms' home countries since a complete bonding with the U.S. governance system should serve as a perfect substitute for the best governance practices with which U.S. domestic firms similarly comply. Also, if the recent deregulation does not compromise the quality of information environment and investor protection system of cross-listed firms, the evidence observed before the Rule 12h-6 adoption should remain unchanged even after the rule was adopted. According to these rationales, the observation of disparity in firm valuation or "valuation gap" would challenge the validity in legal bonding hypothesis.

Using an entire population of the U.S.-listed foreign firms and the U.S. domestic firms that list their shares on the U.S. major exchanges between 1998 and 2012, the results from pooled ordinary least square (OLS) regressions with industry dummies, and a series of robustness checks, reveal a substantial disparity in valuation between the U.S.-listed foreign firms and the U.S. domestic firms. The results also document the widen discrepancy in valuation following the enactment of Rule 12h-6. Moreover, the results show that this negative impact of the Rule 12h-6 on the valuation gap are varied by the quality of corporate governance systems in firms' home countries. The post-Rule 12h-6 evidence showing smaller valuation gap among firms from stronger governance countries, relative to firms from weaker legal regimes, equally means that the passage of Rule 12h-6 that alleviates the deregistration process so that the foreign issuers can flee the U.S. legal system freely has undermined the dependability of the U.S. securities laws and enforcement in a meaningful way. From the investors' views, the U.S. legal system post-Rule 12h-6 can no longer provide sufficient protection to them, so that they must seek additional protection from other sources such as from a firm's home country's laws. This result hence indicates the

detrimental effect of the Exchange Act Rule 12h-6 on the validity of legal bonding. Interestingly, when comparing with the impact of Sarbanes- Oxley (SOX) Act, I do not observe any existence of valuation gap either among firms from weak or strong governance countries. This evidence suggests that the tough disclosure and reporting requirements imposed by SOX serve as necessary supplements to fulfill the U.S. investor protection system which once were inadequate to protect investors from the expropriation by insiders of the U.S.-listed foreign firms.

This study contributes to the empirical research on the issue of bonding hypothesis by proposing a new perspective to examine the validity of legal bonding. A great number of prior studies test for the validity of bonding hypothesis from the perspective of foreign investors, while this study investigates the legal bonding issue from the U.S. investors' point of view. To the best of my knowledge, I am the first to examine the success of legal bonding from the valuation disparity standpoint. This research paper also contributes to the literature on the costs and the benefits of the deregulation of deregistration requirements for FPIs. The impact of Rule 12h-6 points out that the leniency in the new deregistration rule could have made investors suffer the costs of losing protection and access to information when the foreign companies could terminate their reporting obligations and escape the U.S. investor protection system with less effort. This additional relief from the U.S. securities laws could complicate a moral hazard in cross- listing and thereby attract more listings from low-governance firms or firms with more severe agency problems to the U.S. market.

The implication of this study is that the virtue of the U.S. market ties strongly with its regulatory policies. Several avoidances from the application of U.S. securities law requirements that the SEC has made for foreign issuers in order to make the U.S. a more

attractive venue for foreign listing may not necessarily be beneficial to the U.S. market. It may be true that, in a short run, the more lenient regulatory requirements could help promote more listings and thereby enhance investment opportunities for investors. In the long run, however, several leeway from the U.S. securities law made available for foreign issuers could impair the investor protection system, disparage the quality of the U.S. market and investors' trading confidence, and ruin the prestige of U.S. capital market altogether.

The remaining of the paper proceeds as follows: Section 4.2 provides a review of related literature and testable hypotheses. Section 4.3 describes the sample and variables. Section 4.4 presents and discusses the empirical findings. Section 4.5 concludes the paper and points to some paths for future research.

4.2 Literature review and hypotheses development

4.2.1 Review of related literature

4.2.1.1 Why do firms cross-list?: Bonding hypothesis

This growing importance of cross-listings has led to the presence of several research initiatives to explain the motivation that has made firms seek this route. A large number of empirical studies have been conducted to uncover this issue. Due to variation in firms' and their countries attributes, it is not uncommon to observe the diversity in firms' cross-listing motives such as (1) to obtain access to cheaper capital (Hail and Leuz, 2006, 2009; Lins et al., 2005; Reese and Weisbach, 2002); (2) to improve liquidity (Chung, 2006; Eleswarapu and Venkataraman, 2006; Moulton and Wei, 2009; Silva and Chávez, 2008); (3) to broaden shareholder base (Pagano et al.,2002); and (4) to increase investors' recognition on firms' equities, visibility, or reputation (Baker et al., 2002; King and Segal, 2009; Merton, 1987; Siegel, 2005).

Despite this discrepancy in the cross-listing literature, Karolyi (2006, p.141) points out in his survey study that "there is a unifying theme in these various initiatives in that they all emphasize the growing importance of corporate governance issues in the cross-listing decision." Indeed, numerous studies across all research initiatives of cross-listing have cited the essence of corporate governance as the main driver behind all benefits that local firms may achieve via cross-listing. For instance, the explanation for cross-listing proposed by the "liquidity hypothesis" emphasizes the firms' desire to tap into a large pool of liquidity available in overseas markets as the motive for cross-listing decision. Liquidity hypothesis, however, overlooks one major fact that matters – the role of laws and regulations of a cross-listing country on firms' cross-listing decisions. As Coffee (2002) argues, in a cross-listing decision, firms must choose a market and a regulatory regime together as a bundle package and cannot detach their market choice from their choice of regulatory principles. Strong laws, stringent regulations, and all rigorous policies underlying trading rules are designed purposely to provide protections for outside investors against the expropriation by insiders. Without such sovereignties, outside investors have no way to assure the integrity of the financial markets where they are trading, which will, in effect, limit their confidence in trade and their trading activities altogether. After all, securities markets tend to be more developed and more liquid when the countries' corporate governance systems are robust (La Porta et al., 1997, 1998). With these means, firms cannot merely access a well-developed, liquid market while committing only with flimsy laws typically governing in a thin or undeveloped market.

The emphasis of corporate governance as a unifying theme in various research initiatives for cross-listing has led to a popular initiative widely known as "bonding hypothesis" proposed by Stulz (1999) and Coffee (1999, 2002). The essence of bonding hypothesis

relies on the role of corporate governance in mitigating information and agency problems. As discussed in Stulz (1999), the presence of agency conflicts and asymmetric information issue has constituted the intensity of equity financing risk. For all rational investors to invest their money in such circumstances, the firm's equities must be sold at a very deep-discounted price so that these investors can earn the rate of return that is high enough to compensate such risks. In short, a firm's cost of capital depends critically on its corporate governance quality.

Firms can improve their capital cost by raising the quality of their corporate governance. Though there are several ways that firms can do to promote their corporate governance, the legal approach appears to be a key mechanism for governance revision (La Porta, López de Silanes, Shleifer, and Vishny, 2000; Shleifer and Vishny, 1997). The fact that the robust legal protections can enhance the market for a firm's equities, and thereby improve its ability to finance the business, would have made firms more encouraged to seek out stricter regulatory environments. Unfortunately, firms in many countries frequently cannot rely on legal changes in their jurisdictions due to many local obstacles. These impediments have, therefore, led to the growing importance of cross- listing as a solution for foreign firms seeking out the stricter regulatory environment. Coffee (1999, 2002) argues that cross-listing provides a means for firms to bypass political, cultural, and other impediments to stronger securities laws in their jurisdictions by "renting" the securities laws and enforcement in other countries where the presence of legal framework necessary for strong securities markets does exist. A more stringent regulatory environment of the cross-listing countries such as in the U.S., which includes higher disclosure and reporting requirements, and a more extensive degree of exposure to regulatory oversight, enforcement, class actions, and scrutiny of reputational intermediaries (i.e., underwriters, rating agencies,

auditors, and securities analysts), has made it harder and more costly for insiders to extract private benefits of control from outside investors. Cross-listing, hence, represents an intention of company insiders to circumvent information and agency problems and would be perceived as a favorable management action.

According to its fundamental concept, cross-listing should be beneficial to all investors living locally (home country) or internationally (host country). From the home market position, cross-listing signifies a management intention to circumvent the information and agency issues of a local company. Hence, from this angle, the bonding hypothesis predicts that cross-listed firms should experience a decreasing cost of capital (Hail and Leuz, 2006, 2009; Stulz, 1999) and an increasing equity valuation (Doidge, 2004; Doidge et al., 2009; Gozzi, Levine, and Schmukler, 2008; Sarkissian and Schill, 2009). From the standpoint of investors in the host market, cross-listing helps enrich investors' investment opportunities and tamper the costs and the difficulties of trading foreign stocks. If the legal bonding prediction is valid, cross-listing should effectively transform the corporate governance of a cross-listed firm to be as equally strong as those of the host-market firms. Therefore, investors in the host market should view the domestic and non-domestic firms listed on the country's exchanges indifferently, at least from the corporate governance aspect. Unfortunately, the application of the bonding hypothesis in this area is very scarce, nearly nonexistent. This literature gap is of importance as it would help shed more light on the validity of bonding hypothesis that has been increasingly challenged by a lot of research evidence over the past decade.

4.2.1.2 Failure to bond

A number of important challenges to the legal bonding hypothesis have been documented in several studies. The first challenge is related to the findings that the SEC is

incompetent in enforcing the U.S. securities laws on the U.S.-listed foreign firms. Siegel (2005) assesses the effectiveness of SEC enforcement using the legal actions against the illegal asset tunneling by insiders of Mexican firms cross-listed in the U.S. The author finds that the SEC's responses to such cases have been powerless. Even worse, the SEC has also fallen short of recovering assets from these firms. Siegel (2005) concludes that the SEC's enforcement actions against foreign firms, in general, has been rare and mostly ineffective. In line with Siegel (2005), Kedia and Rajgopal (2011) examine whether the SEC enforcement is more effective when it is local. Based on the resource-constrained view, the authors find a strong connection between the likelihood of firms being investigated by the SEC and the geographic proximity between the SEC office and the investigated firms.

Consistently, Licht et al.(2013) study when the U.S. Supreme Court signaled its intention, on March 29, 2010, to confine the reach of the U.S antifraud regime to geographical limit and find that this court action would take away the protection of the antifraud regime from investors of U.S-listed foreign firms. In sum, these empirical findings imply that the SEC's competence to enforce the corporate governance rules can be jurisdictionally constrained. Since the SEC and its enforcement are one of three major components necessary for the success of cross-listing under Coffee's (1999; 2002) bonding argument, the implication of these studies could serve as an important threat to the bonding hypothesis.

The second confrontation with the proponents of the bonding hypothesis comes from the inconsistency found in the applications of the U.S. securities law requirements for the U.S. domestic and foreign issuers. According to the observation by the U.S. Chamber of

Commerce in an amicus brief[14], "The U.S. Securities and Exchange Commission (SEC) has recognized that enabling foreign companies to avoid the application of U.S. securities law requirements in appropriate circumstances will make the U.S. a more attractive venue for listing and investment" (p.26). Evidently, the SEC has intensively studied how the foreign listing decision is made and deliberately soften the provisions that is the most disturbing to the foreign firms' insiders.

Examples of the exceptions that the SEC made exclusively for the U.S. exchange- listed foreign private issuers include (1) the exemption from obligations concerning proxy statements under section 14 of the Exchange Act and short sales and short-swing profits by corporate insiders under section 16; (2) the exemption from filing interim quarterly reports (10-Qs), as required on other U.S. counterparts; (3) the exemption from the specific information requirement on the interim reports[15]; and (4) the exemption from filing financial reports prepared using U.S. generally accepted accounting principles (U.S. GAAP) only. The comprehensive survey on regulatory accommodations that the SEC made to foreign private issuers is presented in Appendix 4.A. As discussed in Licht (2003), these substantive governance requirements primarily waived for the non-U.S. firms have induced a great deal of inconsistency in the rules and regulations mandating equity issuers in the U.S. market. It almost looks like that there are two different sets of laws governing the equity issuers in the U.S.: one is for U.S. domestic issuers, and another is for non-U.S. companies. From Licht's (2003) view, "The US foreign issuers regime at best curbs

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[14] Available at https://www.americanbar.org/content/dam/aba/publishing/preview/publiced_preview_briefs_pdfs_09_10_08_1191_RespondentAmCuUnitedKingdom.authcheckdam.pdf

[15] Interim reports filed by foreign issuers may contain only whatever information the foreign private issuer has made or is required to make public based on the corporate laws in its home country or based on the requirements in other stock exchange that foreign firms may cross-list on (SEC Rule 13a-16, 17 C.F.R. 240.13a-16 (2008); Form 6-K, 17 C.F.R. 249.306.)

managerial slack through more detailed accounting requirements, but it purposefully shies away from regulating self-dealing" (p.152). If this is the case, the insiders of cross-listed firms can take advantage of the relaxing requirements of the U.S. corporate governance and enter the U.S. market for purposes other than the benefits from legal bonding. An amount of leeway in the U.S. corporate governance requirements given to the foreign private issuers, hence, plays a vital role in determining the failure of legal bonding hypothesis of cross-listing.

4.2.1.3 Regulatory competition among financial markets and the introduction of Exchange Act Rule 12h-6

The U.S. was once a popular destination for foreign companies seeking to raise capital abroad, particularly the 1990s. The U.S. market, however, has faced with the reverse trend when the century has turned. A sharp decline in the U.S. market share of global IPOs from 48% in the late 1990s to 8% in 2006 as reported by Zingales (2007) raised public concern that the relative attractiveness of U.S. equity markets may have weakened. Despite that the slump of international listings in the U.S. market may arrive from the concurrent action of multiple causes, a popular conventional wisdom somehow lays the blame for this phenomenon on the higher regulatory costs imposed by Sarbanes-Oxley Act (SOX) (see, e.g., Duarte, Kong, Siegel, and Young, 2014; Iliev, 2010; Litvak, 2007a,b, 2008; Marosi and Massoud, 2008; Zhang, 2007; Zingales, 2007) and the burdens and the uncertainties of escaping the reporting obligations and the underlying costs faced by foreign issuers under the former deregistration rule (Doidge, Karolyi, and Stulz, 2010; Fernandes et al., 2010).

By rule, an FPI will be subject to SEC registration and ongoing disclosure requirements of the Exchange Act 1934 once pursuing a U.S. cross-listing if it meets any of the following circumstances. (1) *Securities exchange listing - Section 12(b):* A class of a firm's equity

securities is listed on a national securities exchange; (2) *Issuer size - Section 12(g):* The issuer's class of equity securities are held by at least 300 U.S. record holders and a total of either (a) at least 2,000 record holders worldwide or (b) at least 500 persons who are not accredited investors worldwide. Also, the FPI has the total value of assets as of the end of the fiscal year exceeding $10 million; and (3) *Public offering - Section 15(d):* An FPI that has issued equity securities to the public in a registered offering even if it has currently not listed on any securities exchange or crossed the size threshold of Section 12(g) also become subject to Section 15(d) of the Exchange Act (Bell, 2016; Eiger, Humphreys, and Tanenbaum, 2016; SEC, 2013).

An issuer desired to terminate its registration of equity securities can do so by first filing a Form 25 with the SEC to delist its securities under Section 12(b) registration. This action would remove a class of a firm's equity securities from an exchange listing and would *suspend* the issuer's reporting duties under Section 13(a). Once delisting under Section 12(b), an issuer must verify whether it has reporting obligations under Section 12(g) and/or 15(d). If it does, the issuer must also file a Form 15 which will terminate its registration under Section 12(g) and *suspend* its reporting obligations under Section 15(d). The essential qualification for an FPI to file the Form 15 with the SEC is that it must meet the size threshold as stated in Section 12(g). The critical challenge of this size criteria faced by an FPI is that the issuers must "look through" the record ownership of brokers, banks, dealers, and all other nominee accounts on a worldwide basis and count the number of individual accounts of U.S. customers to determine the number of beneficial owners who are U.S. residents. Even worse, the former rule does not allow foreign issuers with Section 15(d) registration, who are those once conducting an SEC-registered offering, to *terminate*, but to merely *suspend*, their ongoing reporting obligations, even after their number of U.S.

record holders are down below the threshold. To be specific, as long as the class of securities is still outstanding, the issuers must continually submit an annual report showing the number of U.S. record holders with the SEC. An issuer's reporting duties would automatically resume if at the end of any fiscal year the number of U.S. residents holding the issuer's securities exceed 300.

In response to the concern that the burdens and uncertainties associated with the exit process might act as deterrence to listing activities in the U.S. markets, on March 21, 2007, the Securities and Exchange Commission unanimously adopted the new Exchange Act Rule 12h-6 permitting a foreign private issuer of equity securities to *terminate* its Exchange Act registration and reporting obligations. The new rule also introduced a more achievable, alternative qualification benchmark "relative average daily trading volume", in addition to the revised head-count measure. In details, an FPI can terminate its registration and reporting obligations if (1) its U.S. average daily trading volume (ADTV) for a recent 12-month period is lower than 5% of the ADTV of that class of securities worldwide for the same period, or if its U.S. holders of record is less than 300 under the modified counting method which limits its U.S. holders counting to accounts located only in the U.S. and their jurisdictions; (2) it meets the *Prior Exchange Act Reporting Condition*: the FPI must have been an Exchange Act reporting firm for at least 12 months prior to the deregistration, filed and provided all reports required for this duration, and has filed at least one annual financial report; (3) it satisfies the *Home Country Listing Condition*: the issuer must maintain the listing of its subject class of equity securities on one or more exchanges which constitutes its primary trading market during the recent twelve-month period prior to the Form 15F filing; (4) it has contented the *One-Year Dormancy Condition*: the FPI must not have sold securities in the U.S. in a registered offering within the twelve-month period prior to its

termination from the Exchange Act.[16]; and (5) the *One-Year Ineligibility Period after Delisting or Termination of ADR Facility* is met. An FPI must wait at least one year after delisting from any U.S. exchanges or terminating its ADR program before it may deregister a class of equity securities under the trading volume benchmark (SEC, 2007).[17] Taken together, the SEC believes that the removal of restrictions on exiting the U.S. market and reporting obligations of foreign issuers through the adoption of new Rule 12h-6 will revive the attractiveness and the competitiveness of the U.S. market on an international scale.

4.2.2. Hypothesis development

This study examines the validity of legal bonding as argued by Coffee (1999, 2002) from the perspective of U.S. investors. I posit that if the concept of complete legal bonding subsequent to cross-listing is valid and that foreign firms can bond successfully with the U.S. legal environment by means of cross-listing, cross-listed firms should be able to effectively transform their corporate governance to be as equally good as those of the U.S. firms. Also, if the U.S. investors have a strong belief in the SEC's enforcement power and scrutiny of reputational intermediaries as argued by Coffee, the leeway in the U.S. governance requirements given to the non-U.S. firms and the quality of corporate governance in those non-U.S. firms' home countries should be irrelevant to the U.S. investor's equity valuation assessment. According to these rationales, I test the validity of

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[16] Exceptions for securities transactions include securities sold in Rule 144A and Regulation S offerings, non-underwritten offerings by selling shareholders, offerings to employees, offerings due to the exercise of outstanding rights, warrants, or convertible securities, or offerings under a dividend or interest rein- vestment plan.

[17] The one-year waiting period requirement will not apply if the U.S. ADTV of the relevant class of equity securities at the time when the FPI delisted that class of equity securities or ceased its ADR facility did not exceed 5% of the worldwide ADTV for the recent 12 months.

legal bonding by using the disparity in the firm valuation, or so-called "valuation gap", as the evidence of unsuccessful bonding. My argument is that a complete bonding with the U.S. governance system should serve as an ideal legal plug-in which helps upgrade the foreign firms' corporate governance to the best governance practices complied by other U.S. domestic firms, and, therefore, firm valuation should be jurisdictionally independent. If, however, the U.S. investors view the lax governance requirements governing the non-U.S. firms and the SEC's jurisdictionally-constrained enforcement as risks, I conjuncture that the U.S. investors would not assess the valuation of U.S.-listed foreign firms as high as the U.S. domestic firms' valuation. This leads to leads to the following hypothesis:

H1: The discrepancies in corporate governance practices between the U.S. domestic and the U.S.-listed foreign firms would lead to the disparity in valuation or valuation gap.

I also utilize the uniqueness of the recent deregulation of deregistration requirements for the foreign issuers. The fact the passage of Exchange Act Rule 12h-6 has made it easier and less costly for foreign issuers to terminate their reporting obligations and escape the U.S. legal environment could raise one's concern as to whether the new deregistration rule would make the U.S. investors to become more vulnerable. Under this circumstance, I posit that if the legal bonding is still valid and that the foreign firms can still bond with the U.S. legal environment as equally strong as they did before the enactment of the Rule 12h-6, the parity in valuation between the U.S. domestic and U.S.-listed foreign firms observed in the pre-Rule 12h-6 period should remain existent and unchanged. However, if the U.S. investors perceive the Exchange Act Rule 12h-6 as a threat that poses higher risk to their investment, I conjuncture that the U.S. investors' valuation assessment on the U.S.-listed foreign firms would become worse after the adoption of the new deregistration rule. This

leads to leads to the following hypothesis:

H2: The introduction of Rule 12h-6 that further widen the discrepancies in corporate governance practices between the U.S. domestic and the U.S.-listed foreign firms would lead to a larger valuation gap.

Considering the possibility that the new deregistration rule could slacken the insiders of the foreign firms' commitment to bonding with the U.S legal system, I test the validity of the legal bonding by examining the diminishing dependability of U.S. laws and regulations to U.S.-listed foreign-stock investors that may exist as a result of the new rule. As earlier discussed, if the legal bonding is still successful, the corporate governance of a cross-listed firm's home country should be irrelevant to its valuation assessed by the U.S. investors, even in the post-Rule 12h-6 period. However, if the U.S. investors investing in U.S.-listed foreign stocks view that their protection and information access have been withdrawn by the new rule, these investors must seek additional protection from other sources such as the legal system in a firm's home country. If this is the case, the U.S. investors will take the quality of corporate governance in a firm's home country in to account when assessing the valuation of non-cross-listed firms. This leads to the following hypothesis:

H3: Relative to firms from stronger governance countries, the introduction of Rule 12h-6 would lead to a larger valuation gap among firms from weaker governance countries.

4.3 Data and variables

4.3.1 Sample Construction

Because this study intends to investigate the connection between the inconsistency in the U.S. corporate governance requirements governing the U.S. domestic and the U.S.-

listed foreign firms and the valuation gap between these firms, particular after the 2007 deregulation, and because this new rule would only affect foreign firms that listed their shares on the U.S. exchanges, my sample firms are limited only to foreign firms that list their shares on the SEC regulated markets, including the NYSE, NASDAQ, and AMEX. The listing venues of the sample firms include ordinary listing, American Depositary Receipt (ADR) Level II and III, and New York Registered Share. Foreign companies accessing the U.S. capital by means of a Rule 144a private placement and other OTC issues via OTC Markets Group are disregarded since the SEC registration requirements, several disclosure and reporting regimes, and regulatory bodies of the Securities Act, including SOX, and the amendment in the SEC deregistration rule through Rule 12h-6 do not apply to these firms. Due to its tiny number, I do not include foreign firms listed on OTC Bulletin Board (OTCBB) market. I, however, include the OTCBB-listed foreign firms in the robustness check and the results remain consistent with the main findings.

I construct the list of companies with U.S. exchange listing between January 1, 1998 and December 31, 2012. This period of study enables me to investigate the pre- and post- effect of the Rule12h-6 amendment on U.S. cross-listing premiums and to disentangle the effect of SOX Act, which remains effective after the Rule 12h-6 entrancement, from the rule effect. I gather the list of foreign companies cross-listed on the U.S. exchanges from two sources. First, I collect the list of firms issuing ADRs or New York Registered Shares - both active and inactive status - from the websites of four major banks, including Citibank, the Bank of New York Mellon, JP Morgan, and Deutsche Bank. For an ordinary listing, I obtain the list of firms from the exchanges' websites and Center for Research in Security Prices (CRSP). The data set from CRSP helps compliment the sample of foreign listings with both active and inactive foreign companies listed their shares on U.S. exchanges either

by ordinary or ADR issues. The CRSP company share code number 12 represents an ordinary listing while share code number 30 and 31 represent an ADR listing.

I manually cross-check and verify domicile countries of foreign firms, U.S. listing date, changes in U.S. listing status, including upgrading, downgrading, and delisting, and delisting date, if any, by consulting with the Form 20-F, 10-K, or 40-F from SEC filing as well as the companies' websites. For any firm which initially lists on one major exchange and later move to another, I keep the listing date, exchange, and ADR program of the first admission. I apply several selection criteria to the raw sample to ensure a more uniform set of sample data used in the analysis. First, all sample firms must have data available on total assets, total sales, and market capitalization during the U.S. cross- listing years, and data on total sales must be available at least three consecutive years, so that the two-year geometric average sale growth can be estimated. Second, I drop financial firms, investment funds, REITs, and trusts out from the sample since highly leveraged and heavily regulated financial institutions can behave differently from firms in other industries. Third, firms incorporated in offshore tax havens, including Bermuda, Cayman Islands, Jersey, Marshall Islands, British Virgin Islands, Bahamas, U.S. Virgin Islands, the Netherlands Antilles, Isle of Man, Guernsey, and Falkland Islands are also removed. Lastly, I keep the firm-year observations of a company only during the period when these firms remain listing on U.S. exchanges since this is the period when the firms bond with the U.S. legal system. I disregard all firm-year observations before exchange listing and after delisting.

Following Burns, Francis, and Hasan (2007) who test the validity of bonding hypothesis from the U.S. investors' point of view, I use U.S. domestic firms that publicly listed on U.S. exchanges between 1998 and 2012 as a control group. The similar selection criteria also apply to U.S domestic firms. Before applying any criteria, the raw sample of firms

listing on the U.S. exchanges between 1998 - 2012 consists of 913 non-U.S. firms from 51 countries and 3,041 U.S. firms. After applying all the selection criteria, I am left with 731 U.S.-cross-listed firms from total 37 countries and 2,474 U.S. firms.

4.3.2 Data and Variables

The summary of all variables discussed in this section as well as the sources of data are defined in Table 4.1.

Table 4.1: Variable Definitions

Tobin's q and Sales growth are winsorized at the 1st and 99th percentiles to reduce the potential impact of outliers.

Variable	Definition
Foreign	A binary variable that indicates the non-U.S. status of a firm. It equals one for a firm that listed on a U.S. exchange but is not U.S. domicile and zero for a U.S. domestic firm that listed on a U.S. exchange. *Sources: The Bank of New York, Citibank, JP Morgan, Deutsche Bank, NYSE, NASDAQ, Center for Research in Security Prices (CRSP), Companies' websites, SEC filings from EDGAR, and Datastream.*
PostRULE	A binary variable that indicates events after the enactment of Exchange Act Rule 12h-6. It equals one if a firm lists on U.S. exchange on or after June 4, 2007 and zero otherwise.
PostSOX	A binary variable that indicates events after the enactment of SOX. It equals one if a firm lists on U.S. exchange on or after July 30, 2002 and zero otherwise.
Tobin's q	The calculation of Tobin's q consists of two parts. For the nominator, I take the book value of total assets, subtract the book value of equity, and add the market value of equity. For the denominator, I use the book value of total assets. All variables are in local currency. *Source: Compustat*
Sale growth	Sale growth is the two-year geometric average of sale growth. Sale growth is estimated from the inflation-adjusted sales in local currency. *Sources: Compustat, World Bank WDI database*
Firm age	Firm age is the number of years that a firm has been publicly traded. *Sources: Datastream, CRSP*
Global industry q	Global Industy Q is the median Tobin's q across all firms within the firm's industry. Firms' industries are classified into ten major divisions based on their NAICS codes. The calculation of Tobin's q consists of two parts. For the nominator, I take the book value of total assets, subtract the book value of equity, and add the market value of equity. For the denominator, I use the book value of total assets. *Source: Compustat*
GDP growth	GDP growth is the annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2010 U.S. dollars. In the summary statistics table, GDP growth is presented in annual percentage, while in all other tables, GDP growth is in the form of natural logarithm. *Source: World Bank WDI database*

Table 4.1 (continued)

Variable	Definition
Revised Anti-Director Right index (ADRI)	The index is an updated version of the original La Porta et al. (1998) Anti-Director Right index which has been widely used as a country's corporate governance measure (Doidge, 2004). The index indicates the quality of laws as they are written, such as how strongly the legal system favors minority shareholders against managers or dominant shareholders in the corporate decision-making process, but not as they are really enforced. The index ranges from zero to five. Higher values indicate that minority shareholders have more rights and better protection. *Source: Djankov et al. (2008)*
Efficiency of the judicial system	The index measures "the efficiency and integrity of the legal environment as it affects business, particularly foreign firms" produced by the country risk rating agency International Country Risk. The index ranges from zero to ten. Higher values indicate higher efficiency levels judicial system. *Source: La Porta et al. (1998)*
Ownership	Average percentage of common shares owned by the top three shareholders concentration in the ten largest non-financial, privately-owned domestic firms in a given country. A firm is considered privately-owned if the State is not a known shareholder in it. *Source: La Porta et al. (2006)*
Disclosure index	Disclosure index measures the extent to which investors are protected through disclosure of ownership and financial information. The index ranges from zero to ten, with higher values indicating more disclosure. *Source: World Bank WDI database*
IFRS adoption	A binary variable that equals one if a firm is required by its home country to prepare its annual reports in compliance with the IFRS standard, and zero otherwise. *Source: Compustat*
Big 5 auditor	A binary variable indicates whether a firm employed a Big 5 auditor. Big 5 auditor equals one in a firm-year observation that a firm employed a Big 5 auditor and zero otherwise. *Source: Compustat*

4.3.3 Dependent variable - Tobin's q

Tobin's q is a measure for valuation. Following Doidge, Karolyi, and Stulz (2004) and La Porta, Lôpez de Silanes, Shleifer, and Vishny (2002), the estimation for Tobin's q consists of two parts. For the nominator, I take the book value of total assets, subtract the book value of equity, and add the market value of equity. For the denominator, I use the book value of total assets. All variables are obtained from Worldscope database and they are all in local currency. It is important to note that, with similar reasons described by Doidge et al. (2004) and Gozzi et al. (2008), I do not attempt to use replacement cost in the denominator and the market value of debt in the numerator since the required data are generally not available for my sample of firms. Moreover, different accounting methods for depreciation used in firms from different countries would cause inconsistency in the estimation of the replacement cost of assets.

4.3.4 Foreign variable

Foreign indicator variable is a binary variable that indicates the non-U.S. status of a firm. It captures the valuation discount, if any, from being a non-U.S. company. *Foreign* indicator variable equals one for a firm that listed on a U.S. exchange but is not U.S. domicile and zero for a U.S. domestic firm that listed on a U.S. exchange. As earlier discussed, due to the greater leeway in the U.S. corporate governance and, as a result, the higher possibility of legal bonding avoidance of non-U.S. firms, I anticipate the coefficient of *Foreign* indicator variable to be negative. The negative sign of *Foreign* indicator variable would indicate the "valuation disparity" which is the valuation discount that a non-U.S. firm encounters with as a consequence of the unsuccessful legal bonding with the U.S. securities laws and enforcement.

4.3.5 Regulatory event variables

The U.S. regulatory events of interest in this study are regulations that U.S. foreign private issuers must comply with when pursuing U.S. cross-listing during the period of study. In particular, these regulations include the announcement of SOX Act in 2002 and the enactment of the Exchange Act Rule 12h-6 in 2007. Even though the main regulatory event of interest in this study is the amendment of the Exchange Act Rule 12h-6 in 2007, it is important to include the announcement of SOX Act in 2002 in the examination. The fact that the details in the SOX Act remains fully effective and untouched by the new Exchange Act of 2007 would mean that the impact of the Rule 12h-6 enactment on the valuation disparity observed after 2007 must derive from the concomitant effect between the SOX Act and Rule 12h-6.

To disentangle the impacts of these two regulations on the disparity in valuation between U.S. and non-U.S. firms, I construct two binary variables, *PostRULE* and *PostSOX*. *PostRULE* is a binary variable that indicates events after the enactment of Exchange Act Rule 12h-6. It equals one if a firm lists on U.S. exchange on or after June 4, 2007 and zero otherwise. *PostSOX* is a binary variable that indicates events after the enactment of SOX. It equals one if a firm lists on U.S. exchange on or after July 30, 2002 and zero otherwise.

It is worth to note that the coefficients of *PostSOX* and *PostRULE* themselves would only serve as a time fixed effect. To estimate the variation in valuation disparity in a particular regulatory period, we need to create the new variable by interacting a *Foreign* dummy variable with the corresponding regulatory event variable. The interaction term *Foreign* × *PostSOX* would represent the impact of SOX on the valuation disparity where the interaction term *Foreign* × *PostRULE* would illustrate the concomitant impact of SOX

and Rule 12h-6 on the valuation disparity. In the model where both interaction terms, *Foreign* × *PostRULE* and *Foreign* × *PostSOX*, are included, the coefficient of *Foreign* × *PostRULE* would however indicate the exclusive impact of rule without SOX.

4.3.6 Corporate governance variables

Corporate governance of foreign firms' home countries is of importance in this study. It represents the benefits and costs that firms could perceive from each listing location and could, therefore, determine the variation in valuation gains/losses of U.S.-listed foreign firms as a consequence of changes in the U.S. regulations. To control for the variation in firm valuation that may arrive from the corporate governance quality of a firm's jurisdiction, I include three corporate governance measures that are widely used in the literature, including the *Revised Anti-Director Rights Index*, the *Efficiency of the judicial system*, and the *Ownership concentration*, in the model (see, e.g., Doidge et al., 2004, 2009, 2010; Duarte et al., 2014; Fernandes et al., 2010; Ghosh and He, 2017; Marosi and Massoud, 2008). The *Revised Anti-Director Rights Index* is an updated version of the original La Porta et al. (1998) Anti-Director Right index which has been widely used as a measure of the quality of corporate governance as written by law. The revised Anti-Director Rights Index obtained from Djankov, La Porta, Lopez-de Silanes, and Shleifer (2008) provides a better measure of minority shareholder rights by interacting the original anti-director right index with a measure of how well laws are enforced using the "public enforcement index" of Djankov et al. (2008). The *Efficiency of the judicial system* from La Porta et al. (1998) measures "the efficiency and integrity of the legal environment as it affects business, particularly foreign firms" produced by the country risk rating agency International Country Risk. The index ranges from zero to ten. Higher values indicate

higher efficiency levels judicial system. Obtained from La Porta, López de Silanes, and Shleifer (2006), the *Ownership concentration* is an average percentage of common shares owned by the top three shareholders in the ten largest non-financial, privately-owned domestic firms in a given country. Higher values would hence indicate weaker corporate governance.

It is not uncommon to think that the new deregistration rules may not necessarily share a uniform impact on firm valuation across all U.S.-listed foreign firms. The reason could partly stem from the differences in corporate governance characteristics of firms. To observe this potential effect, I separate firms into two subsamples according to the strength in governance regimes in their home countries. I construct a "*high-*" and a "*low-*" score group of firms for each individual corporate governance measure using the median cut off. Firms are indicated as a high- (low-) governance-score group if their countries' corporate governance index is greater than or equal to (less than) the median score of all sample countries.

I anticipate the inequivalent valuation impact of the new Exchange Act on deregistration and reporting requirements among foreign firms from countries with different governance regimes. In particular, the costs of the deregulation, such as the potential decline in the valuation of the U.S.-listed foreign firms, likely due to the incline in investor- perceived risk associated with U.S-listed foreign stocks, would be more severe on firms from weaker legal institution countries. We should hence observe a pronounced negative coefficient of the interaction term "*Foreign* × *PostRULE*" among the poor governance firm group (i.e., low revised anti-director right index, low efficiency of the judicial system, and high ownership concentration).

4.3.7 Other control variables – Firm-specific variable

To control the variation in firm valuation which may arise from other time-varying factors at firm-level, I follow Doidge et al. (2004) and Gozzi et al. (2008) by adjusting for a variation in firm growth measured by the natural logarithm of one plus sale growth. *Sale growth* is estimated as the geometric average of annual inflation-adjusted growth in sales over the last two years. Sales data is gathered from the Compustat and Worldscope Database, is in the U.S. currency, and is inflation-adjusted. Because the availability of the company's information could be greater by the duration of business incorporation and this acquisition of firm information would facilitate the valuation assessment of investors, I control the effect of information environment on a firm's valuation by including the natural logarithm of firm age in the model specification. Firm age is basically the number of years that a firm has been publicly traded and firm age variable is constructed from the data obtained from CRSP and Datastream database. Lastly, prior research finds that employing a high-quality auditor could promote a firm's corporate governance quality. I adjusted for the valuation relevance of a firm's governance condition by using *Big 5 auditor* indicator variable which equals one in a firm-year observation that a firm employed a Big 5 auditor and zero otherwise.

4.3.8 Other control variables – Industry-specific variable

At the industry-level, following Doidge et al. (2004), Doidge et al. (2009) and Gozzi et al. (2008), I control for time-varying industry effects by including Global industry q which is the median Tobin's q of a firm's industry where firms are classified into ten major SIC divisions.

4.3.9 Other control variables – Country-specific variable

To control for time-varying country effect, I include the gross domestic product (GDP) growth. *GDP growth* is the annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2010 U.S. dollars. It is obtained from the World Bank WDI Database. In the summary statistics table, GDP growth is presented in annual percentage, while in all other tables, GDP growth is in the form of natural logarithm. I also include the logarithm of *Disclosure index* obtained from Worldbank database to control for the variation in firm valuation that may arise from the difference in information environment of the U.S. market and of the firm's home country.

I also control for the variation in firm valuation that may arrive from the effect of accounting standard used in preparing the financial statement. In 2007, the SEC relaxed its reporting requirements for a non-U.S. firm by accepting the financial statements pre- pared using International Financial Reporting Standards (IFRS) without reconciliation of earnings and stockholders' equity to U.S. GAAP. Gordon, Jorgensen, and Linthicum (2008) compare the accounting-based and market-based earnings attributes under IFRS and U.S. GAAP for a sample of U.S.-listed foreign firms that report under IFRS between 2004 and 2006. The authors find that discontinuing reconciliation of IFRS to the U.S. GAAP results in the less informative financial statements for valuation. If this is a case, U.S. GAAP should still be a preferable accounting standard to IFRS from the U.S. investors' point of view as the financial statement prepared using U.S. GAAP should allow them to perform the valuation assessment more accurately. To account for this effect, I include *IFRS adoption* which is a binary variable that equals one if a firm is required by its home country to prepare its annual reports in compliance with the IFRS standard and, zero

otherwise.

4.4 Summary statistics

Table 4.2 reports summary statistics for the main variables employed in the analysis using all firm-year data of all sample firms.

Table 4.2: Summary Statistics

This table presents summary statistics for the main variable employed in the analysis. The sample includes all firm-year data during the U.S. exchange-listing period of the U.S.-listed foreign firms and the U.S. domestic firms between 1998 and 2012. Financial firms, investment fund, or trusts and firms incorporated in offshore tax havens are excluded. The definition of all variables is in Table 4.1. Tobin's q and sale growth are winsorized at 1 and 99 percentiles.

	Obs	Mean	Median	Std. Dev	5th percentile	95th percentile
Tobin's q	16992	2.2875	1.5790	2.1585	0.7184	6.1266
Sale growth	16992	0.1265	0.1066	0.2709	-0.3090	0.6381
Firm age	16992	7.6142	7.0000	4.2148	3.0000	15.0000
Global industry q	16992	1.7153	1.6271	0.5261	1.1132	2.2857
GDP growth	16992	0.0241	0.0253	0.0255	-0.0278	0.0664
Revised Anti-Director Right index	16991	3.1418	3.0000	0.6834	3.0000	5.0000
Efficiency of the judicial system	16948	9.6570	10.0000	0.9603	6.7500	10.0000
Ownership concentration	16362	0.2466	0.2000	0.1066	0.2000	0.5100
Disclosure index	16992	7.4317	7.4000	1.1205	7.0000	10.0000
IFRS adoption	16992	0.0345	0.0000	0.1825	0.0000	0.0000
Big 5 auditor	16992	0.7935	1.0000	0.4048	0.0000	1.0000

Table 4.3 presents the univariate tests for U.S.-listed foreign firms' characteristics. Firms are categorized into groups by mean of the period when they pursue U.S. cross-listings. Firms that are cross-listed on the U.S. exchanges between January 1998 and June 2002, between July 2002 and May 2007, and between June 2007 and December 2012 are classified as PreSOX, PostSOX-PreRULE, and PostRULE group, respectively.

Table 4.3: Univariate Test - A Comparison of Characteristics of the U.S.-Listed Foreign Firms Over Time

This table presents univariate tests for the main variable employed in the analysis. The sample includes the cross-listing-year data of the U.S.-listed foreign firms that cross-listed on the U.S. exchanges between January 1, 1998 and December 31, 2012. Financial firms, investment fund, or trusts and firms incorporated in offshore tax havens are excluded. Firms that cross-listed on the U.S. exchanges before the enactment of SOX (January 1, 1998 - July 29, 2002) are in the PreSOX group, firms that cross-listed on or after the enactment of SOX and before the Exchange Act Rule 12h-6 adoption (July 30, 2002 - June 3, 2007) are in the PostSOX-PreRULE group, and firms that cross-listed on or after the Exchange Act Rule 12h-6 adoption (June 4, 2007 - December 31, 2012) are in the PostRULE group. The definition of all variables is in Table 4.1. ***, **, * indicate that the compared means are statistically different at 1%, 5%, and 10% significance levels, respectively.

	PreSOX (1)			PostSOX-PreRULE (2)			PostRULE (3)			Difference in means			
	Obs	Mean	Median	Obs	Mean	Median	Obs	Mean	Median	(2) - (1)	Std.Err	(3) - (2)	Std.Err
Tobin's q	216	3.0260	1.7570	120	2.7496	2.0425	163	2.5365	1.8081	-0.2764	(0.2978)	-0.2131	(0.2563)
Sale growth	216	0.2379	0.2108	120	0.3014	0.2534	163	0.2999	0.2920	0.0634**	(0.0308)	-0.0015	(0.0324)
Firm age	216	4.4028	3.0000	120	5.4833	3.0000	163	4.4969	3.0000	1.0806**	(0.4763)	-0.9864*	(0.5165)
Global industry q	216	1.9554	1.7710	120	1.8795	1.9838	163	1.5544	1.6035	-0.0759	(0.0687)	-0.3251***	(0.0338)
GDP growth	216	0.0423	0.0388	120	0.0525	0.0370	163	0.0579	0.0607	0.0103***	(0.0039)	0.0053	(0.0053)
Revised Anti-Director Right index	216	3.9259	4.0000	120	3.4458	4.0000	162	2.6019	2.5000	-0.4801***	(0.1357)	-0.8440***	(0.1736)
Efficiency of the judicial system	216	9.1146	9.2500	120	8.4625	9.2500	162	7.9877	6.7500	-0.6521***	(0.1576)	-0.4748***	(0.1810)
Ownership concentration	210	0.3978	0.4000	98	0.4364	0.4000	89	0.4104	0.4000	0.0387***	(0.0141)	-0.0260	(0.0177)
Disclosure index	216	7.2194	8.0000	120	7.8283	8.0000	163	8.5067	10.0000	0.6089**	(0.2480)	0.6784***	(0.2418)
IFRS adoption	216	0.0000	0.0000	120	0.0250	0.0000	163	0.2270	0.0000	0.0250*	(0.0143)	0.2020***	(0.0359)
Big 5 auditor	216	0.8380	1.0000	120	0.8250	1.0000	163	0.8037	1.0000	-0.0130	(0.0430)	-0.0213	(0.0468)

The results from 4.3 show that over time the valuation of U.S.-listed foreign firms at the time of cross-listing has been declining. This decline is not statistically significant, however. The median scores illustrate the pattern that is more expected and is in line with the literature concerning the effect of SOX on valuation improvement. The hike in sale growth observed among firms with the PostSOX-PreRULE cross-listing is also consistent with the view that only foreign firms with high growth opportunities seeking cheaper financing abroad will perceive the benefits of cross-listing and, as a result, decide to bond with the stringent SOX requirements. With this in mind, the opposite evidence showing a significant decline in Global industry q, which is also a proxy for growth opportunities, among the post-Rule 12h-6 cross-listed firms should hence raise a concern about the potential change in the motive behind a cross-listing decision of a foreign firm as a result of the new deregistration rule. Plausibly, legal bonding may lose its leading role in the U.S. cross-listing initiative since the lack of business growth opportunities and thereby the limited outside financing demand would detract from the value of cross-listing as posited by the bonding theory. In addition to the changes in the cross-listed firms' attributes, the variation in corporate governance characteristic of firms' home countries is also worth exploring. The results illustrate the decline in corporate governance quality of cross-listed firms, captured by the means of revised Anti-Director Right index and the efficiency of the judicial system, over time. This finding is indeed disturbing as one may take this evidence as a sign of deterioration in the U.S. market quality, even before the adoption of the new deregistration rule. When studying the medians of these corporate governance measures, I document that flow of cross-listed firms from weak governance countries is, in fact, heavily concentrated at the post-Rule 12h-6 period. The influx of poor-governance firms into the U.S. market following the downward regulatory movement might not simply be a coincidence. If it is true that the passage of Rule 12h-6 could cause the withdrawal of the

commitment to the U.S. disclosure regulations and legal provisions of foreign issuers, the finding that the U.S. market in the post-Rule 12h-6 period has become increasingly attractive to low-growth firms from countries where agency problem is predominant should be very worrisome, particularly by the U.S. authorities. This evidence could also serve as an additional challenge to the validity of bonding hypothesis as it appears that firms that cross-listed on the U.S. exchanges after the enactment of the Rule 12h-6 likely do so for purposes other than bonding and accessing the cheaper U.S. capital.

Table 4.4: Univariate – A Comparison in Valuation of the U.S.-Listed Foreign Firms versus the U.S. Domestic Firms Over Time

This table presents the comparison in firm valuation measured by Tobin's q between the U.S.-listed foreign firms and the U.S. domestic firms that are publicly listed on the U.S. exchanges over the period from 1998 to 2012. The sample includes all firm-year observations during the U.S. exchange-listing period of the sample firms. Financial firms, investment funds, trusts, and firms from tax heaven countries are excluded. Firms that cross-listed on the U.S. exchanges before the enactment of SOX (January 1, 1998 - July 29, 2002) are in the PreSOX group, firms that cross-listed on or after the enactment of SOX and before the Exchange Act Rule 12h-6 adoption (July 30, 2002 - June 3, 2007) are in the PostSOX-PreRULE group, and firms that cross-listed on or after the Exchange Act Rule 12h-6 adoption (June 4, 2007 - December 31, 2012) are in the PostRULE group. ***, **, * indicate that the valuation of U.S exchange-listed foreign firms are statistically different from the valuation of U.S. domestic firms in a specified period at 1%, 5%, and 10% significance level.

Period	U.S.-listed foreign firms foreign firms		U.S. domestic firms		U.S.-listed
	Tobin's q	Change from the lag period firms	Tobin's q	Change from the lag period	vs. U.S. domestic
Mean:					
All	1.9619		2.3872		−0.4253***
PreSOX	1.9704		2.4035		−0.4330***
PostSOX-PreRULE	2.0502	0.0797	2.3385	−0.0649	−0.2884***
PostRULE	1.7722	−0.2780***	2.4165	0.0779	−0.6443***
Median:					
All	1.3798		1.6607		−0.2809***
PreSOX	1.3798		1.6578		−0.2780***
PostSOX-PreRULE	1.4227	0.0430***	1.6466	−0.0112***	−0.2239***
PostRULE	1.3488	−0.0739***	1.7058	0.0592***	−0.3570***

Table 4.4 presents the univariate tests for firm valuation, measured by Tobin's q, between the U.S.-listed foreign firms and the U.S. domestic firms. This analysis produces several vital observations. First, the results, both mean and median, illustrate that the parity in valuation between non-U.S. and U.S domestic firms *does not* exist. As witnessed by their higher valuation, the U.S. firms indeed appear to be superior to the U.S.-listed foreign firms from the U.S. investors' viewpoint. Second, the evidence showing the improvement in the valuation of the non-U.S. firms following the SOX adoption indicates that the stringent governance requirements of SOX seem to be beneficial to the investors of non-U.S. firms. The detailed disclosure requirements and severe penalties for noncompliance or false reporting imposed by SOX could serve as an effective device to enhance the confidence and the protection for the U.S. investors against the expropriation risk from the insiders of the non-U.S. companies. In line with this argument, the evidence reporting the narrower disparity in firm valuation observed at the PostSOX-PreRULE period further supports that the passage of SOX is advantageous to the development of the non-U.S. firms' corporate governance system. Third, the decreasing valuation of the U.S. domestic firms subsequent to the enactment of SOX illustrates that, from the U.S. investors' perspective toward the U.S. domestic firms, some requirements of SOX can be too excessive and create unnecessary, expensive compliance costs, particularly among the smaller firms. The section 404 of SOX and its application, for example, have been under siege by business groups and policymakers. Evidence of negative stock return found in Iliev (2010) and Zhang (2007) suggests that the high costs of Section 404 compliance such as costs related to additional internal control and extra audit fees paid to the outside auditors for attesting the management's internal control report appear to overshadow its benefits. Fourth, and finally, in consonance with my conjecture on the negative impact of the Exchange Act Rule 12h-6

on the U.S. corporate governance system for foreign issuers, I document the decline in valuation of the non-U.S. firms post Rule 12h-6 and the widening discrepancy in valuation between these firms and the U.S. firms. This slump in the non-U.S. firms' valuation reveals that the U.S. investors recognize the deregulation on deregistration and reporting requirements for foreign issuers as a threat. The passage of Rule 12h-6 that makes it easier for foreign firms to terminate their reporting obligations with the SEC through the use of softer qualification requirements for deregistration could reduce the firmness of insider's commitment to U.S. disclosure regulations and legal provisions. So, instead of bonding, the insiders of the foreign firms can take advantage of these too-permissive requirements and enter the U.S. market for some other purposes, more likely moral hazard involved.

4.5 Research Method

To assess the valuation relevance of differences in the U.S. governance requirements for foreign issuers and U.S. issuers, I adopt the experimental strategy used by Aggarwal et al.'s (2008) study investigating the investment in the internal governance of U.S. versus foreign firms and its impact on firm valuation. Aggarwal et al.(2008) build their research approach from the recognition that the robustness in legal institutions and the advancement in the financial and economic development of the U.S. constitute the soundness in internal corporate governance of firms in the U.S. Accordingly, the authors argue that "we would expect the internal governance of firms in the United States to come as close as possible to what the optimal internal governance of a firm would be in a foreign country if it were not constrained by weaker institutions and lower development than in the United States" (Aggarwal et al., 2008, p. 3132). Applying this approach, the authors' document evidence that foreign firms, in general, invest less in internal governance mechanisms than their

counterpart U.S. firms. The authors also find a negative relation- ship between the magnitude of the governance investment shortfall among foreign firms, relative to U.S. firms, and their valuation.

Borrowing Aggarwal et al.'s (2008) concept, I analyze the impact of inequality in corporate governance requirements for the U.S. domestic and the U.S.-listed foreign firms on their valuation discrepancy. I regress the firm valuation, measured by Tobin's q, on foreign indicator variable and two regulatory event indicator variables, including *PostRule* and *PostSOX* which control for the variation in firm valuation that may associate with the change in regulatory periods. I control for the variation in firm valuation which may arise from other time-varying factors at firm-, industry-, and country-level by including firm, industry, and country characteristic variables. I also control for the variation in firm valuation that may arise from other time-invariant factors at the industry level by including industry dummies. The country dummies are, however, omitted since the strong correlation between the foreign indicator variable and the country dummies may cause the nearly perfect multicollinearity issue in the regression model. Similarly, I exclude the individual year dummies from the model since the regulatory dummy variables could serve the same purpose. Having both year dummies and regulatory dummies in the same model would hence result in the perfect multicollinearity issue. The main model specification of this study is as follows:

$$\ln(1 + \text{Tobin's q})$$

$$= \beta_0 + \beta_1 \text{Foreign} + \beta_2 \text{PostRULE} + \beta_3 \text{PostSOX} \quad (4.1)$$
$$+ \beta_4 \ln(1 + \text{Sales growth}) + \beta_5 \ln(\text{Firm age})$$
$$+ \beta_6 \text{Global industry q} + \beta_7 \ln(1 + \text{GDP growth})$$
$$+ \beta_8 \ln(\text{Disclosure index}) + \beta_9 \text{IFRS adoption}$$
$$+ \beta_{10} \text{Big 5 auditor} + \text{Industry Dummies} + \varepsilon_{it}$$

To examine the further divergence in the U.S. corporate governance requirements for the U.S. domestic and U.S.-listed foreign firms as a result of the Exchange Act Rule 12h-6 adoption and its effect on the valuation disparity, I extend the main model of equation (4.1) by incorporating the interaction terms between the *Foreign* indicator variable and the regulatory event dummies, *PostRule* and *PostSOX*. The coefficients of the interaction terms would capture the valuation difference derived from the adjustment in the corporate governance discrepancy between the U.S.-listed foreign firms and the U.S. domestic firms occurring through the forces of the two U.S. regulatory events, including the Exchange Act Rule 12h-6 and SOX.

Notably, there are two issues necessary to be mentioned here. First, despite that the regulatory event in the focal point of this study is not the SOX Act of 2002, it is necessary to consider the SOX effect when estimating the effect of the Exchange Act Rule 12h-6. Since the details in the SOX Act remain fully effective even after the adoption of the Exchange Act Rule 12h-6 in 2007, leaving the SOX variable out of the analysis would cause the omitted-variable bias and, as a result, the biased estimate. The study by Ghosh and He (2017), for instance, fails to adjust for the SOX effect when investigating the economic impact of Exchange Act Rule 12h-6 on the benefits of U.S.-exchange cross-

listing. Failure to account for the impact of SOX would hence lead to an upward bias in their estimated impact of Rule 12h-6 on cross-listed firms' valuation. For this reason, I incorporate both SOX and Rule 12h-6 event dummies in the model. Second, in the extended model where the interaction terms between the foreign indicator variable and the regulatory event variables are included, the coefficients of the regulatory variables, *PostSOX* and *PostRULE*, themselves, only serve as time fixed effects. It is the coefficients of the interaction terms that indicate the impacts of the U.S. regulations on the valuation disparity between the U.S. domestic and the U.S.-listed foreign firms. In essence, the *Foreign* × *PostSOX* coefficient would represent the impact of the SOX Act on the valuation disparity, after controlling for the effect of *Rule 12h-6*. Likewise, *Foreign* × *PostRULE* coefficient would illustrate the impact of Exchange Act Rule 12h-6 on the valuation disparity, *after controlling for the impact of SOX*. The model specification of the second hypothesis is as follows:

$$\begin{aligned}\ln(1+\text{Tobin'sq}) &= \beta_0 + \beta_1\text{Foreign} + \beta_2\text{PostRULE} + \beta_3\text{PostSOX} \\ &+ \beta_4\text{Foreign} \times \text{PostRULE} + \beta_5\text{Foreign} \times \text{PostSOX} \\ &+ \beta_6\ln(1+\text{Sales growth}) + \beta_7\ln(\text{Firm age}) \\ &+ \beta_8\text{Global industry q} + \beta_9\ln(1+\text{GDP growth}) \\ &+ \beta_{10}\ln(\text{Disclosure index}) + \beta_{11}\text{IFRS adoption} \\ &+ \beta_{12}\text{Big 5 auditor} + \text{Industry Dummies} + \varepsilon_{it}\end{aligned} \tag{4.2}$$

To investigate the extent to which the disparity in valuation may vary by the quality of firms' home country corporate governance, I employ the model specifications of equation

(4.1) and (4.2) and run the analyses using two subsamples: one is the subsample of firms from countries with *high* governance score, another one is the subsample of firms from countries with *low* governance score. Firms are indicated as a high- (low-) governance-score group if the value of the specified corporate governance measure is greater than or equal to (less than) the median value. Firms will be considered a *strong* corporate governance group when their home countries are rated high on Revised Anti-Director Right index and Efficiency of the judicial system, and *low* on Ownership concentration, and vice versa.

4.6 Empirical results

4.6.1 Evidence on the differences in the U.S. corporate governance requirements for The U.S. domestic and the U.S.-listed foreign firms and the valuation disparity

Table 4.5 presents the results of the estimations of equation (4.1) employing the pooled OLS regression analyses. The baseline model reports the result of the complete sample, whereas the other models (i.e., high vs. low models) show the estimation results using the subsamples of firm data classified by firms' home countries' corporate governance score.

Table 4.5: Pooled OLS Regression Analysis - The Valuation Disparity Between the U.S.-Listed Foreign Firms and the U.S. Domestic Firms

This table presents results from the pooled OLS regression analyses that estimate the impact of the difference in the U.S. corporate governance requirements for the U.S.-listed foreign firms and the U.S. domestic firms on the valuation disparity between these firms. The sample includes all firm-year observations during the U.S. exchange-listing period of the U.S.-listed foreign firms and the U.S. domestic firms over the period from 1998 to 2012. Financial firms, investment funds, trusts, and firms from tax heaven countries are excluded. The dependent variable in each regression is ln(1+Tobin's q). Foreign is a binary variable that indicates the non-U.S. status of a firm. It equals one for a firm that listed on a U.S. exchange but is not U.S. domicile and zero for a U.S. domestic firm that listed on a U.S. exchange. PostRULE is a binary variable that indicates events after the enactment of Exchange Act Rule 12h-6. It equals one if a firm lists on U.S. exchange on or after June 4, 2007 and zero otherwise. PostSOX is a binary variable that indicates events after the enactment of SOX. It equals one if a firm lists on U.S. exchange on or after July 30, 2002 and zero otherwise. Firms are indicated as high- (low-) governance- score group if a specified corporate governance measure of their home countries is greater than or equal to (less than) the median value. The standard errors (in parentheses) are robust to heteroscedasticity and cross-sectional correlation in a given year. *, **, *** indicate statistical significance at 10%, 5%, and 1% levels, respectively.

Variable	Baseline	Revised Anti-Director Right index		Efficiency of the judicial system		Ownership concentration	
		High	Low	High	Low	High	Low
Foreign	-0.0960***	-0.0806***	-0.1516***	-0.0684***	-0.1491***	-0.1667***	-0.0399**
	(0.0176)	(0.0150)	(0.0348)	(0.0154)	(0.0302)	(0.0265)	(0.0162)
PostRule	-0.0028	0.0199	0.0051	0.0166	0.0045	0.0052	0.0196
	(0.0280)	(0.0276)	(0.0278)	(0.0274)	(0.0289)	(0.0284)	(0.0273)
PostSOX	0.0409**	0.0352*	0.0484**	0.0411**	0.0417**	0.0464**	0.0424**
	(0.0176)	(0.0165)	(0.0176)	(0.0156)	(0.0188)	(0.0190)	(0.0157)
ln(1+Sale growth)	0.3305***	0.3186***	0.3282***	0.3185***	0.3274***	0.3308***	0.3126***
	(0.0298)	(0.0298)	(0.0323)	(0.0286)	(0.0327)	(0.0329)	(0.0296)
ln(Firm age)	-0.0326**	-0.0355**	-0.0292	-0.0375**	-0.0276	-0.0299	-0.0338**
	(0.0151)	(0.0164)	(0.0185)	(0.0159)	(0.0189)	(0.0192)	(0.0157)

Table 4.5 (continued)

Variable	Baseline	Revised Anti-Director Right index		Efficiency of the judicial system		Ownership concentration	
		High	Low	High	Low	High	Low
Global industry q	0.2438***	0.2407***	0.2453***	0.2490***	0.2390***	0.2432***	0.2378***
	(0.0476)	(0.0470)	(0.0478)	(0.0474)	(0.0477)	(0.0475)	(0.0454)
ln(1+GDP growth)	-0.1087	0.0455	0.2584	-0.2830	0.4135	0.2409	0.3804
	(0.4222)	(0.5945)	(0.5692)	(0.5672)	(0.5803)	(0.5436)	(0.7449)
ln(Disclosure index)	0.0729***	0.1864***	0.0161	0.0603	0.0411	0.0310	0.0817**
	(0.0158)	(0.0219)	(0.0286)	(0.0440)	(0.0251)	(0.0268)	(0.0338)
IFRS adoption	0.0021	0.0234	-0.0428*	0.0201	-0.0151	-0.0141	0.0066
	(0.0183)	(0.0214)	(0.0233)	(0.0231)	(0.0214)	(0.0189)	(0.0197)
Big 5 auditor	0.0086	0.0045	-0.0002	0.0087	-0.0014	-0.0004	0.0018
	(0.0198)	(0.0199)	(0.0222)	(0.0196)	(0.0230)	(0.0217)	(0.0206)
Intercept	0.4892***	0.2587**	0.6300***	0.5023***	0.5822***	0.5851***	0.5037***
	(0.0804)	(0.0941)	(0.1013)	(0.1213)	(0.0948)	(0.0958)	(0.1098)
Observations	16898	15599	14307	15247	14659	14911	14995
Adjusted R^2	0.1630	0.1573	0.1669	0.1578	0.1656	0.1726	0.1533
Industry effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Consistent with my prediction and the observations by Aggarwal et al.(2008), the coefficients of the *Foreign* indicator variable in all specifications of Table 4.5 are negative and highly significant indicating that the U.S.-listed foreign firms, on average, have the lower valuation than the U.S. domestic firm. This negative significance of *Foreign* indicator variable, in other words, represents the valuation disparity or valuation gap between the U.S. domestic and the U.S.-listed foreign firms. These findings appear to contradict the ordinary notion of the bonding theory of cross-listing, however. Evidence of an expanded valuation gap observed among the subsamples of firms residing in the weaker governance countries further disturbs the validity of bonding hypothesis. As earlier discussed, if the concept of complete legal bonding after cross-listing is valid so that foreign firms can bond successfully with the U.S. legal environment through cross-listing, the cross-listed firms should be able to effectively transform their corporate governance to be as equally good as those of the U.S. firms. By this mean, the valuation of the U.S.-listed foreign firms should be the same as their counterpart U.S. domestic companies' and most importantly should be independent of the quality of corporate governance in their home countries. The evidence of valuation discounted found among the U.S.-listed foreign firms, relative to the U.S. domestic firms, hence indicates the unsuccessful bonding of the cross-listed firms. Indeed, the persistence of a corporate governance shortfall in the foreign firms cross-listed on the U.S. exchanges is of ongoing concern to the U.S. investors as reflected by their deficiency in valuation relative to the benchmark U.S. domestic firms.

4.6.2 Evidence on the impact of the Exchange Act Rule 12h-6 enactment on the divergence in the U.S. corporate governance requirements for the U.S. domestic and the U.S.- listed foreign firms

Table 4.6 provides evidence for the H2 hypothesis, testing whether the adoption of

Exchange Act Rule 12h-6 would accentuate the discrepancy in the U.S. corporate governance systems for the U.S. domestic and the U.S.-listed foreign firms and thereby intensify the bonding issue of cross-listing.

Table 4.6: Pooled OLS Regression Analysis - The Impact of the Exchange Act Rule 12h-6 Enactment on the Valuation Disparity between the U.S.-Listed Foreign Firms and the U.S. Domestic Firms

This table presents results from the pooled OLS regression analyses that estimate the impact of the Exchange Act Rule 12h-6 enactment on the valuation disparity between the U.S.-listed foreign firms and the U.S. domestic firms. The sample includes all firm-year observations during the U.S. exchange- listing period of the U.S.-listed foreign firms and the U.S. domestic firms over the period from 1998 to 2012. Financial firms, investment funds, trusts, and firms from tax heaven countries are excluded. The dependent variable in each regression is ln(1+Tobin's q). Foreign is a binary variable that indicates the non-U.S. status of a firm. It equals one for a firm that listed on a U.S. exchange but is not U.S. domicile and zero for a U.S. domestic firm that listed on a U.S. exchange. PostRULE is a binary variable that indicates events after the enactment of Exchange Act Rule 12h-6. It equals one if a firm lists on U.S. exchange on or after June 4, 2007 and zero otherwise. PostSOX is a binary variable that indicates events after the enactment of SOX. It equals one if a firm lists on U.S. exchange on or after July 30, 2002 and zero otherwise. The standard errors (in parentheses) are robust to heteroscedasticity and cross-sectional correlation in a given year. ***, **, * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

Variable	Model 1	Model 2
Foreign	-0.0934***	-0.0913***
	(0.0200)	(0.0201)
PostRule	0.0312	0.0257
	(0.0277)	(0.0285)
PostSOX	0.0293	0.0369*
	(0.0177)	(0.0179)
Foreign × PostRULE	-0.1035***	-0.1078***
	(0.0200)	(0.0204)
Foreign × PostSOX	0.0132	0.0204
	(0.0177)	(0.0176)
ln(1+Sales growth)	0.3254***	0.3303***
	(0.0279)	(0.0298)
ln(Firm age)	-0.0330**	-0.0322*
	(0.0152)	(0.0154)
Global industry q	0.2579***	0.2432***
	(0.0470)	(0.0473)
ln(1+GDP growth)	-0.0393	-0.0409
	(0.4062)	(0.4173)
ln(Disclosure index)	0.0794***	0.0779***
	(0.0143)	(0.0147)
IFRS adoption	0.0006	0.0071
	(0.0179)	(0.0185)
Big 5 auditor	0.0122	0.0099
	(0.0204)	(0.0206)
Intercept	0.4979***	0.4769***
	(0.0908)	(0.0799)
Observations Adjusted	16898	16898
R^2	0.1610	0.1639
Industry effects?	No	Yes

To examine the Rule 12h-6 effect, I incorporate the interaction terms between the *Foreign* indicator variable and the regulatory event variables, *PostRULE* and *PostSOX*, into the model. Evidence of a negative coefficient of the *Foreign* × *PostRULE* variable that is highly significant in all model specifications is in line with the hypothesis that the Rule 12h-6's passage could cause additional complication in the legal bonding issue of the non-U.S. firms. These results show that, after controlling for the effects of all economic determinants as well as the SOX Act, the valuation of the foreign firms that cross-listed on the U.S. exchanges after the enactment of Rule 12h-6 has further declined. This slump in the U.S.-listed foreign firms' valuation likely happens from the worsening condition in the U.S. disclosure and protection system governing the U.S. foreign issuers. The fact that the new deregistration rule has made it easier for the foreign issuers to slip away the U.S. securities laws and enforcement system has left the U.S. investors the most vulnerable. The higher risk of losing protection and access to information of the currently-traded non-U.S. stocks incurred to the U.S. investors as a consequence of the new rule would hence further depress the valuation of the U.S.-listed foreign firms and cause the valuation gap between the U.S. domestic and U.S.-listed foreign firms to become even wider.

Table 4.7: Pooled OLS Regression Analysis - The Impact of the Exchange Act Rule 12h-6 Enactment on the Valuation Disparity between the U.S.-Listed Foreign Firms and the U.S. Domestic Firms, Adjusting for the Home Countries' Corporate Governance Effect

This table presents results from the pooled OLS regression analyses that estimate the impact of the Exchange Act Rule 12h-6 enactment on the valuation disparity between the U.S.-listed foreign firms and the U.S. domestic firms, adjusting for the effect of the firms' home countries' corporate governance. The sample includes all firm-year observations during the U.S. exchange-listing period of the U.S.-listed foreign firms and the U.S. domestic firms over the period from 1998 to 2012. Financial firms, investment funds, trusts, and firms from tax heaven countries are excluded. The dependent variable in each regression is ln(1+Tobin's q). Foreign is a binary variable that indicates the non-U.S. status of a firm. It equals one for a firm that listed on a U.S. exchange but is not U.S. domicile and zero for a U.S. domestic firm that listed on a U.S. exchange. PostRULE is a binary variable that indicates events after the enactment of Exchange Act Rule 12h-6. It equals one if a firm lists on U.S. exchange on or after June 4, 2007 and zero otherwise. PostSOX is a binary variable that indicates events after the enactment of SOX. It equals one if a firm lists on U.S. exchange on or after July 30, 2002 and zero otherwise. The standard errors (in parentheses) are robust to heteroscedasticity and cross-sectional correlation in a given year. *, **, *** indicate statistical significance at 10%, 5%, and 1% levels, respectively.

Variable	Model 1	Model 2	Model 3	Model 4
Foreign	-0.1096***	-0.0469**	0.0207	0.0163
	(0.0263)	(0.0174)	(0.0245)	(0.0216)
PostRule	0.0258	0.0265	0.0253	0.0256
	(0.0283)	(0.0281)	(0.0279)	(0.0279)
PostSOX	0.0381*	0.0407**	0.0382**	0.0383**
	(0.0178)	(0.0183)	(0.0177)	(0.0177)
Foreign × PostRULE	-0.0957***	-0.0942***	-0.0761***	-0.0786***
	(0.0192)	(0.0208)	(0.0192)	(0.0180)
Foreign × PostSOX	0.0306*	0.0339*	0.0324*	0.0311*
	(0.0161)	(0.0160)	(0.0154)	(0.0152)
Revised Anti-Director Right index	0.0174			
	(0.0107)			
Efficiency of the judicial system		0.0401***		
		(0.0066)		
Ownership concentration			-0.5228***	
			(0.0657)	
Principal components				0.0931***
				(0.0100)
ln(1+Sales growth)	0.3298***	0.3236***	0.3138***	0.3110***
	(0.0298)	(0.0304)	(0.0295)	(0.0296)
ln(Firm age)	-0.0316*	-0.0315*	-0.0315*	-0.0323*
	(0.0155)	(0.0161)	(0.0152)	(0.0154)
Global industry q	0.2408***	0.2370***	0.2356***	0.2355***
	(0.0469)	(0.0462)	(0.0438)	(0.0440)
ln(1+GDP growth)	0.1195	0.3797	0.2916	0.2934
	(0.4776)	(0.5245)	(0.5819)	(0.5914)

Table 4.7.(continued)

Variable	Model 1	Model 2	Model 3	Model 4
ln(Disclosure index)	0.0716***	0.0433**	0.0224	0.0004
	(0.0173)	(0.0195)	(0.0170)	(0.0168)
IFRS adoption	0.0005	0.0113	0.0066	0.0178
	(0.0172)	(0.0173)	(0.0183)	(0.0169)
Big 5 auditor	0.0094	0.0130	0.0030	0.0062
	(0.0203)	(0.0204)	(0.0205)	(0.0201)
Intercept	0.4345***	0.1503*	0.7048***	0.5653***
	(0.0750)	(0.0728)	(0.0871)	(0.0811)
Observations	16897	16854	16268	16268
Adjusted R^2	0.1642	0.1672	0.1646	0.1659
Industry effects?	Yes	Yes	Yes	Yes

When introducing the corporate governance variable into the model, the estimations presented in Table 4.7 produce three essential observations. First, consistent with the results from Table 4.6, the coefficient of the *Foreign* × *PostRULE* variable that is negative and highly significant in all model specification regardless of the corporate governance measure used. This finding suggests that the adverse impact of the Rule 12h-6 on the valuation of the U.S. –listed foreign firms remains persistent, even after controlling for the corporate governance factor. Second, in line with the results from the univariate tests, the insignificant coefficient of the *Foreign* × *PostSOX* variable points out that the stringent governance requirements of SOX seem to be beneficial to the investors of non-U.S. firms. The detailed disclosure requirements and severe penalties for noncompliance or false reporting imposed by SOX could serve as an effective device to enhance the confidence and the protection for the U.S. investors against the expropriation risk from the insiders of the non-U.S. companies. The evidence reporting the insignificant disparity in firm valuation following the adoption of SOX, adjusting for the effect of Rule 12h-6, supports that the passage of SOX is advantageous to the development of the non-U.S. firms' corporate governance system. Finally, the results showing the statistical significance of corporate governance coefficients with the expected signs (positive for the revised Anti-Director Right index and the Efficiency of the judicial system, and negative for the Ownership concentration) illustrate that the valuation of the sample firms does depend on the corporate governance condition in a firm's home country. This result is inconsistent with the common belief under the bonding theory of cross-listing stating that firms can overcome the local impediments to the cheaper financing, such as weak governance regimes, that hinder their ability to secure better valuation, by cross-listing in the U.S. market. If the bonding hypothesis is valid and the bonding is successful, we should observe that the legal frameworks in firms' home

countries should become irrelevant to the firms' valuation once firms cross-listed their equities on the U.S. exchange. The contradictory evidence from the bonding prediction documented in this analysis hence raises great concern about the validity of the bonding hypothesis.

Table 4.8: Pooled OLS Regression Analysis - The Impact of the Exchange Act Rule 12h-6 Enactment on the Valuation Disparity among the U.S.-Listed Foreign Firms from the Countries with High Vs. Low Governance Score

This table presents results from the pooled OLS regression analyses that estimate the impact of the Exchange Act Rule 12h-6 enactment on the valuation disparity between the U.S.-listed foreign firms from the countries with high vs. low governance score and the U.S. domestic firms. The sample includes all firm-year observations during the U.S. exchange-listing period of the U.S.-listed foreign firms and the U.S. domestic firms over the period from 1998 to 2012. Financial firms, investment funds, trusts, and firms from tax heaven countries are excluded. The dependent variable in each regression is ln(1+Tobin's q). Foreign is a binary variable that indicates the non-U.S. status of a firm. It equals one for a firm that listed on a U.S. exchange but is not U.S. domicile and zero for a U.S. domestic firm that listed on a U.S. exchange. PostRULE is a binary variable that indicates events after the enactment of Exchange Act Rule 12h-6. It equals one if a firm lists on U.S. exchange on or after June 4, 2007 and zero otherwise. PostSOX is a binary variable that indicates events after the enactment of SOX. It equals one if a firm lists on U.S. exchange on or after July 30, 2002 and zero otherwise. Firms are indicated as high- (low-) governance- score group if a specified corporate governance measure of their home countries is greater than or equal to (less than) the median value. The standard errors (in parentheses) are robust to heteroscedasticity and cross-sectional correlation in a given year. *, **, *** indicate statistical significance at 10%, 5%, and 1% levels, respectively.

Variable	Revised Anti-Director Right index		Efficiency of the judicial system		Ownership concentration	
	High	Low	High	Low	High	Low
Foreign	-0.0795***	-0.1420***	-0.0817***	-0.1141***	-0.1609***	-0.1609***
	(0.0181)	(0.0344)	(0.0192)	(0.0295)	(0.0265)	(0.0209)
PostRule	0.0251	0.0255	0.0252	0.0259	0.0251	0.0251
	(0.0285)	(0.0285)	(0.0285)	(0.0286)	(0.0289)	(0.0277)
PostSOX	0.0346*	0.0439**	0.0328*	0.0459**	0.0431**	0.0390**
	(0.0170)	(0.0177)	(0.0164)	(0.0183)	(0.0179)	(0.0171)
Foreign × PostRULE	-0.0398**	-0.1347***	-0.0693***	-0.1118***	-0.1107***	-0.0472
	(0.0161)	(0.0381)	(0.0188)	(0.0364)	(0.0337)	(0.0271)
Foreign × PostSOX	0.0047	0.0469	0.0609***	-0.0344	0.0278	0.0275
	(0.0136)	(0.0374)	(0.0168)	(0.0273)	(0.0308)	(0.0214)
ln(1+Sales growth)	0.3186***	0.3288***	0.3182***	0.3274***	0.3307***	0.3125***
	(0.0297)	(0.0324)	(0.0285)	(0.0327)	(0.0329)	(0.0295)
ln(Firm age)	-0.0354**	-0.0286	-0.0380**	-0.0259	-0.0294	-0.0340**
	(0.0164)	(0.0188)	(0.0160)	(0.0191)	(0.0194)	(0.0158)

Variable	Revised Anti-Director Right index	
	High	Low
Global industry q	0.2408***	0.2456***
	(0.0471)	(0.0480)
ln(1+GDP growth)	0.0437	0.2745
	(0.5927)	(0.5751)
ln(Disclosure index)	0.1859***	0.0294
	(0.0223)	(0.0268)
IFRS adoption	0.0288	-0.0489*
	(0.0215)	(0.0243)
Big 5 auditor	0.0049	0.0005
	(0.0202)	(0.0225)
Intercept	0.2613**	0.5932***
	(0.0951)	(0.0981)
Observations	15599	14307
Adjusted R2	0.1572	0.1677
Industry effects?	Yes	Yes

Efficiency of the judicial system		Ownership concentration	
High	Low	High	Low
0.2489***	0.2376***	0.2429***	0.2378***
(0.0474)	(0.0471)	(0.0475)	(0.0455)
-0.3005	0.5587	0.2898	0.3733
(0.5593)	(0.6103)	(0.5580)	(0.7438)
0.059	0.0539**	0.0405	0.0810**
(0.0442)	(0.0234)	(0.0250)	(0.0339)
0.0212	-0.0193	-0.0075	0.0075
(0.0230)	(0.0213)	(0.0188)	(0.0194)
0.0081	0.0007	0.0008	0.0017
(0.0198)	(0.0235)	(0.0226)	(0.0207)
0.5098***	0.5434***	0.5640***	0.5052***
(0.1219)	(0.0898)	(0.0936)	(0.1100)
15247	14659	14911	14995
0.1581	0.1668	0.1732	0.1533
Yes	Yes	Yes	Yes

Considering the possibility that the new deregistration rule could slacken the insiders' commitment to bonding with the U.S legal system, the new rule would result in the declining dependability of the U.S. laws and regulations against the non-U.S. firms and would prompt the U.S. investors trading the U.S.-listed foreign stocks to seek additional protections from the other sources, mainly the securities laws in a firm's jurisdiction. Consistent with this conjecture, the results from Table 4.8 show that the negative impact of Rule 12h-6 on the valuation gap between the U.S. domestic and the U.S.-listed foreign firms does vary by the corporate governance condition of the firms' home countries. The non-U.S. firms residing in countries with weaker governance regimes tend to receive much stronger adverse impact, almost twice the size or more, from the Rule 12h-6 passage than the firms from stronger governance regime countries. This evidence is in harmony with the argument that the diminishing reliability of the U.S. protection system against the foreign firms as a consequence of the new deregistration rule would force the U.S. investor to be more cautious when investing in the cross-listed stocks. The U.S.-listed foreign stocks issued by firms residing in a country where the legal protection is weak, and the agency problem is prevalent should be priced lower than those issued by firms from stronger governance countries. Taken together, these results suggest that the U.S.-listed foreign firms fail to bond with the U.S. governance system entirely and therefore could not reap the same benefits of the U.S. listing seized by the U.S. domestic firms. Very likely, several exemptions from the U.S. corporate governance requirements, not to mention the new deregistration rule, made available exclusively for the foreign issuers appear to be the essential reason disturbing the success of legal bonding.

4.7 Conclusion

This study investigates the connection between the inconsistency in the U.S. securities law governing the U.S. domestic and the U.S.-listed foreign firms that has been further intensified through the enactment of the Exchange Act Rule 12h-6 and the valuation gap between these firms. The fact that the foreign issuers can legally avoid several applications of the U.S. disclosure and reporting requirements could imperil the information dissemination of the U.S.-listed foreign stocks and compromise the quality of information environment faced by the U.S.-listed foreign companies. Worse yet, the recent changes in deregistration requirements permitting foreign issuers to terminate their reporting obligations with the SEC would further compound the current information environment issue. Additionally, the passage of the new rule that softens the qualification requirements for deregistration so that more foreign issuers can flee the U.S. legal enforcement system could also disable the future enforcement actions of the SEC against the foreign firms al- together. Considering the concern that the U.S. securities laws public enforcement against foreign issuers has been problematic and unsuccessful since before the 2007 deregulation (see, e.g. Kedia and Rajgopal, 2011; Licht et al., 2013; Siegel, 2005), the approval for foreign issuers to slip away the U.S. legal enforcement through the new deregistration rule will rip apart the protection systems for U.S. investors against the non-U.S. firms in every possible level.

Using a sample of all U.S.-listed foreign firms and the U.S. domestic firms that list their shares on the U.S. major exchanges between 1998 and 2012, the results reveal a substantial disparity in valuation between these firms. This evidence suggests that corporate governance is of the essence of firm valuation. When the U.S.-listed foreign firms can- not bond themselves successfully with the U.S. governance system, the investors take this governance shortfall as a valuation discount. The results of the valuation gap between the U.S.-listed

foreign firms and the U.S. domestic firms that have become further extended following the enactment of Rule 12h-6, particularly among firm from weaker governance regime countries, support the prediction that the Exchange Act Rule 12h-6 is detrimental to the U.S. information and protection system for the U.S. investors. The passage of Rule 12h-6 that makes it easier for foreign firms to terminate their reporting obligations with the SEC through the use of softer qualification requirements for deregistration could also reduce the firmness of insider's commitment to U.S. disclosure regulations and legal provisions. The slump in the U.S.-listed foreign firms' valuation post Rule 12h-6 hence signifies that the U.S. investors could foresee the possibility that the insiders of the foreign firms can take advantage of these overly-permissive requirements and enter the U.S. market for some other purposes, more likely moral hazard involved. Taken together, these findings contribute an additional challenge to the validity of the bonding hypothesis. More importantly, much evidence explains that the failure of the bonding hypothesis does not necessarily stem mainly from the intention to avoid bonding of the foreign firms themselves. In fact, to a great extent, the failure of the bonding appears to arise from how the U.S. disclosure and reporting requirements have been designed for the non-U.S. issuers so that firms can lawfully avoid several applications of the U.S. securities laws. Without the double governance standards used by the U.S. authorities in governing the equity issuers, all U.S.-listed foreign firms would be forced to bond with the U.S. securities laws and enforcement system the same way that the local U.S. firms must do. The consistency in the U.S. governance standard is hence a necessary element to revitalize not only the success of legal bonding but also the exceptional role of the U.S. market in the legal bonding theory of cross-listing.

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APPENDIX

Appendix 4A Summary of the exemptions from the U.S. securities law requirements for the foreign private issuers

Several regulatory accommodations that the SEC made to foreign companies that qualify as foreign private issuers listed on U.S. exchanges include:

- *Later Deadline for Annual Report Filings*: A foreign issuer that is subject to the SEC registration and the ongoing disclosure requirements of the Exchange Act 1934.[18] is obligated to file an annual report on Form 20-F, similar to a Form 10-K filed by the U.S. domestic issuers. However, the foreign issuers are permitted to file an annual report within four months after the issuer's fiscal year end[19], whereas the deadlines for filing annual reports for the U.S. domestic issuers are between 60 and 90 days after the end of the fiscal years, depending on the accelerated filer status of the issuers.
- *Exemption from Quarterly Report Filings*: On the contrary to the U.S. domestic issuers who are required to file additional financial reports on a quarterly basis on Form 10-Q, the foreign private issuers are, in general circumstances, exempted from the quarterly financial reporting requirement.
- *No Prescribed Specific Disclosures on Interim Report Filings*: From time to time, an FPI must furnish an interim report containing material information necessary for an investment decision in its securities to the SEC under cover of Form 6-K. Form 6-K works in a similar way to a Form 10-Q (which includes financial reports) and a Form 8-K (which discloses material events) that a U.S. domestic issuer is required to file. However, unlike Form 10-Q or Form 8-K, there are no specifically-prescribed disclosure requirements for events or information to be reported on Form 6-K.[20]

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[18] Under the general rules, a foreign private issuer will be subject to SEC registration and ongoing disclosure requirements of the Exchange Act 1934 if it meets any of the following circumstances. (1) *Securities exchange listing - Section 12(b):* A class of a firm's equity securities is listed on a national securities exchange; (2) *Issuer size - Section 12(g):* The issuer's class of equity securities are held by more than 300 U.S. record holders and a total of either (a) at least 2,000 record holders worldwide or (b) at least 500 persons who are not accredited investors worldwide. Also, the FPI has the total value of assets as of the end of the fiscal year exceeding $10 million; and (3) *Public offering - Section 15(d):* An FPI that has issued equity securities to the public in a registered offering even if it has currently not listed on any securities exchange or crossed the size threshold of Section 12(g) also become subject to Section 15(d) of the Exchange Act.

[19] Or, within six months after the end of the fiscal year covered by the report for fiscal years ending before December 15, 2011

[20] An FPI is simply required to promptly disclose on Form 6-K the material information that the foreign private issuer (1) makes or is required to make public pursuant to the law of its domicile, incorporation, or organization (2) files or is required to file with a stock exchange on which its securities are traded and which was made public by that exchange, or (3) distributes or is required to distribute to its security holders.

- *Limited Disclosure Requirements on Executive Compensation*: Unless individual disclosure is re- quired in an issuer's home country and is otherwise already publicly disclosed, an FPI is allowed to disclose the compensation paid, and the benefits in kind granted, to the company's directors and members of its administrative, supervisory or management officers in aggregate amount, instead of an individual basis.
- *Exemption from the Proxy Rule under Rule 3a12-3(b) of the Exchange Act* : An FPI with registered securities pursuant to Section 12 of the Exchange Act is exempt from the SEC's proxy rules under Section 14 of the Exchange Act (specifically, Sections 14(a), 14(b), 14(c), and 14(f))[21] and Regulations 14A and 14C. Accordingly, the SEC rules related to proxy solicitations in connection with shareholder meetings and the SEC rules for presenting shareholder proposals does not apply to the foreign private issuers. An FPI, however, is required to furnish and distribute information to its U.S. shareholders concerning matters for which proxies are being sought under cover of Form 6-K if filing proxy materials is required in its home country.
- *Exemption from Filing Reports of Beneficial Ownership Under Section 16(a) of the Exchange Act*: An FPI is exempted from Section 16(a) of the Exchange Act which requires the company's officers, directors, and stockholders holding directly or indirectly of more than 10% of the company's Section 12-registered class of securities (collectively, "insiders") to file public reports of their holdings of, and transactions in, equity securities.
- *Exemption from the Short-Swing Provisions under Section 16(b) of the Exchange Act:* An FPI's insiders are exempted from the short-swing[22] profit recovery rules set forth in Section 16(b) which requires the insiders to disgorge to the domestic U.S. issuer any profits from purchases and offsetting sales of the company's securities made within a six-month period.
- *Exemption from Fair Disclosure, Regulation FD*: Regulation FD addresses the selective disclosure of information by publicly traded companies and other issuers. An FPI is exempted from the Regulation FD providing that the issuer must make public disclosure the material information that the issuer limitedly

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[21] For the cross-border tender offer provisions of Sections 14(d) and 14(e) of the Exchange Act, an FPI may not avail itself of the tender offer exemptions if its U.S. stockholders own more than 40% of the securities involved in the tender offer.

[22] A short-swing transaction is the purchase and sale, or sale and purchase, of any equity security of an issuer within a period of less than six months.

discloses to certain individuals or entities, often large institutional investors and securities market professionals, such as stock analysts.

- *Flexibility in Accounting Standard Used:* Unlike the U.S. domestic issuers that do not have any flexibility in choosing the accounting principle, an FPI is permitted to file its financial statements prepared by using either U.S. GAAP, IFRS as issued by the International Accounting Standards Board (IASB), or home accounting standards. Additionally, if an FPI's financial statements is prepared by IASB-issued IFRS standard, there is no U.S. GAAP reconciliation needed. If, however, local accounting standards or non-IASB IFRS is used, financial statements must be reconciled to U.S. GAAP.
- *More Accommodating Rules on Regulation BTR Trading Restriction*: Pursuant to Section 306(a) of the Sarbanes-Oxley Act, the Regulation BTR prevents any insider from, directly or indirectly, engaging in transactions with respect to the issuer's equity securities (i.e., buying, selling, acquiring, and transferring) during any pension plan blackout period, if the insider acquired the equity security in connection with his or her service or employment as a director or executive officer. Under a general circumstance, a blackout period is defined as a suspended trading period that affects at least 50% of the participants or beneficiaries under all individual account plans. For foreign private issuers, however, the determination of a blackout period is merely restricted to the plan participants that are located in the U.S. In addition, unless either (1) plan participants in the U.S. subject to the blackout represent more than 15% of all plan participants worldwide or (2) more than 50,000 plan participants in the U.S. are subject to the blackout, a blackout period of an FPI will not occur.
- *Exemption from Sarbanes-Oxley 302 Certification*: CEOs and CFOs of a foreign private issuer are exempted from certifying in Form 6-K reports under sanction of civil and criminal penalties regarding, among other things, material disclosures, fair presentation of financial statements and other financial information and the adequacy of internal financial controls.
- *Exemption from Sarbanes-Oxley 906 Certification*: CEOs and CFOs of a foreign private issuer are exempted from certifications that financial statements reported in Form 6-K fully comply with Section 13(1) or 15(d) of Exchange Act and information in report fairly presents, in all material respects, the financial condition and results of operations of the company.
- *Flexibility in Corporate Governance Practices Used:* An FPI is granted exemption to follow certain corporate governance requirements that is set either by the U.S. national securities exchange that the

company cross-listed on or by its home country. If the local governance requirements were adopted, an FPI must disclose the differences in its governance practices from requirements of the relevant U.S. exchange in the Form 20-F.[23]

- *Flexibility in Reporting Currency Used:* Rule 3-20 of Regulation S-X permits a foreign private issuer to file financial statements in any currency which management deems appropriate.
- *Ability to utilize the U.S./Canada Multijurisdictional Disclosure System (MJDS)*: Certain Canadian issuers may take advantage of the MJDS system which allows (1) the use of a prospectus prepared in accordance with Canadian disclosure requirements in the U.S. public offering registration, (2) the use of Canadian continuous disclosure documents to satisfy the U.S. continuous reporting obligations, and (3) the limited review by the SEC on the registration form and the periodic reports filed using the MJDS forms.
- *Ability to terminate U.S. registration and reporting requirements:* Unlike the domestic U.S. issuers that are only permitted to suspend certain reporting requirements under the Exchange Act, Rule 12h-6 of 2007 allows a foreign private issuer to terminate its registration and reporting requirements under the Exchange Act compensation committee.

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[23] For example, pursuant to Rule 952 of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, NYSE and Nasdaq exempt a foreign private issuer that follows its home country corporate governance practices from both the compensation committee independence and advisor rules as long as the FPI discloses in its annual report the reasons of not having independent compensation committee.